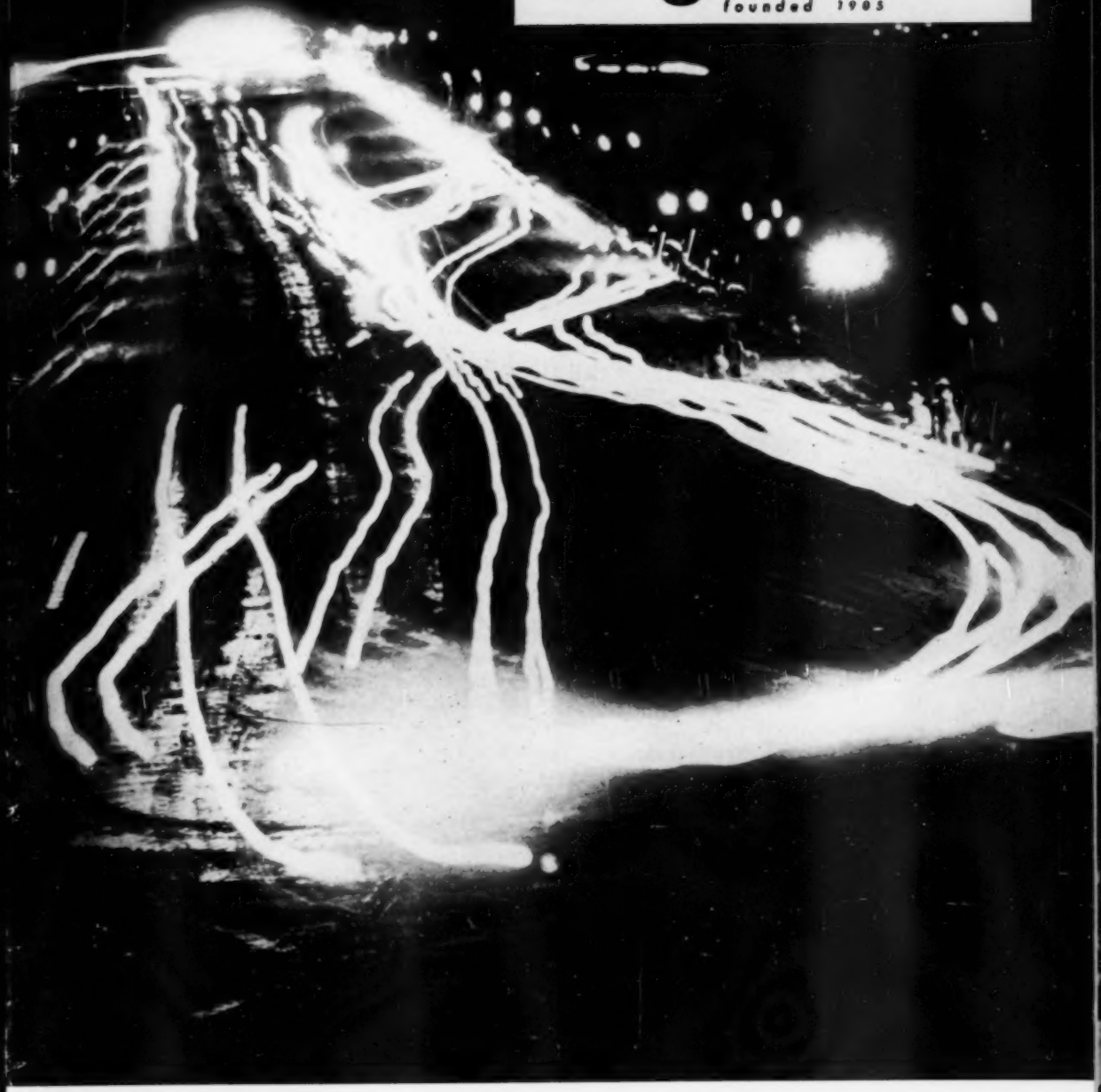
Excavating Engineer

founded 1905



SEPTEMBER, 1952

FOUR-PURPOSE PRESIDENT ALEMAN DAM rises in Mexico's Oaxaca jungleland. Twenty million dollar project will furnish power, irrigation, navigation and flood control. Headlights of wagons and scrapers building embankment trace pattern on film exposed during night work. Article begins on page 14.

In dredge-building, there's no substitute for

UNDIVIDED RESPONSIBILITY

Selecting Bucyrus-Erie to build your dredge means that responsibility for it is undivided from design through construction.

Your job is surveyed in detail to determine the proper dredge design. Many years of varied engineering experience provide the background for thorough analysis of your dredging problems and recommendations for their solution.

Construction facilities unsurpassed in the industry go into the building of the dredge. Castings, forgings, weldments, heat treatment, and machining are subject to rigid laboratory control to make a top quality product. High-grade workmanship under close inspection assures a finished machine.

Assembly and final testing are under the supervision of Bucyrus-Erie engineers — the final product must meet specifications.

This undivided responsibility produces a dredge capable of long-time outstanding performance for *your* work.

120D52

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

NOW - *a versatile new*

truck body!

Side-dumping over an embankment.

Side-dumping into a crusher hopper.

for all 'round off-highway hauling

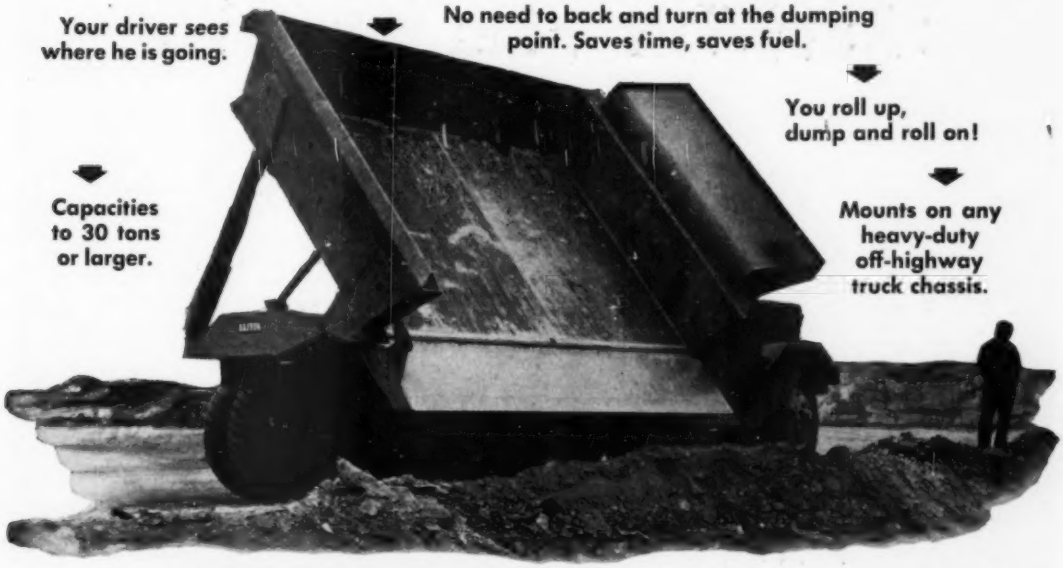
Here's the versatile side-dump truck body you've been waiting for—built to mount on any off-highway truck chassis—to handle any type of earth, rock and ore—on any road—against any grade—to dump anywhere, at will.

It's the rugged, rock-proved Type BD hydraulically dumped body featuring EASTON's patented automatic down folding side gate.

This fast, versatile hauler switches easily from job to job, handling rock, ore, earth or mixed loads over any road or grade that your chassis can negotiate. It's a newcomer, introduced a little more than a year ago, rapidly winning interest for fast, low-cost hauling in many types of off-highway service. For complete information ask your local off-highway truck salesman, or write to:

Easton Car & Construction Company, Easton, Pennsylvania

Now you can have these big side-dump advantages in a versatile side-dump unit


Your driver sees where he is going.
No need to back and turn at the dumping point. Saves time, saves fuel.
You roll up, dump and roll on!
Capacities to 30 tons or larger.
Mounts on any heavy-duty off-highway truck chassis.

EASTON SIDE-DUMPS

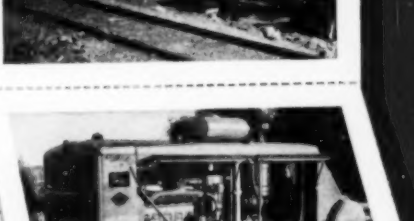
B-1053

GM DIESEL CASE HISTORY No. 516-2

USER: Mancini-Miller-Thompsen Co., East Detroit, Michigan

INSTALLATION: GM 6-71 Diesel, powering an Ingersoll-Rand Gyroflow 600 cfm compressor, which supplies air to a McKiernan-Terry 9B3 double-action hammer.

PERFORMANCE: GM Diesel engine in this compressor does the work of two engines powering 500 cfm compressors formerly needed to drive hammer. Fuel costs are halved. GM Diesel saves 15 minutes starting time.



THIS DIESEL TAKES THE PLACE OF TWO

and cuts costs in half

Here's another application where the compactness and high-speed power of General Motors 2-cycle Diesel engines save money for contractors. With power on every piston downstroke, instead of every second downstroke as in 4-cycle engines, a GM Diesel delivers plenty of smooth, steady power. It gets more work done in less time because it accelerates faster. It starts at the push of a button and is easy to operate and maintain. Compactness of this power-packed engine enables it to fit in about the same space as gasoline engines of comparable power—providing savings of 40% to 70% on fuel and maintenance. See your GM Diesel distributor or write us for full information.

It pays to Standardize on

Watch for Number "A-53,000,000 Horsepower Insurance Policy". Real talk per ads.

GM GENERAL MOTORS DIESEL POWER

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS · DETROIT 28, MICHIGAN

Advertisers

IN THIS ISSUE

American Chain & Cable Co. 9
American Hoist & Derrick Co. 57
American Manganese Steel Div.,
American Brake Shoe Co. 45
American Steel Dredge Co., Inc. 44

Bethlehem Steel Co. 4
Boydell, E., & Co., Ltd. 40
Briggs & Stratton Corp. 50
Broderick & Bascom Rope Co. ....4th Cover
Bucyrus-Erie Co. .....2nd Cover,
12-13, 49, 54-55, 60-61

Caldwell and Co., Inc. 41
Caterpillar Tractor Co. .....3rd Cover

Detroit Diesel Engine Div.,
General Motors Corp. 2
Drake-Williams-Mount 47

Easton Car & Construction Co. 1
Ensign-Bickford Co., The 35
Erie Steel Construction Co. 57
Euclid Road Machinery Co., The 53

For Sale (Classified) 64
Foster, L. B., Co. 44

General Motors Corp.,
Detroit Diesel Engine Div. 2

Hayward Co., The 48
Hercules Powder Co. 8
Hough Co., The Frank G. 58

International Harvester Co 32-33
Jaeger Machine Co., The 42

Koehring Co. 6-7

LaCrosse Trailer Corp. 37
LaPlant-Choate Mfg. Co., Inc. 43
Leschen, A., & Sons Rope Co. 63
LeTourneau, R. G., Inc. 38-39

M-R-S Manufacturing Company 10-11

Newman Manufacturing Co. 47
Northwest Engineering Co. 5

Owen Bucket Co., The 51

Phoenix Products Co. 41

Rogers Bros. Corp. 56

Sauerman Bros., Inc. 52

Wellman Engineering Co., The 62

Excavating Engineer

founded 1905

CONTENTS

Volume XLVI No. 9 **September, 1952**

President Aleman Dam: More Power for Mexico — by Mary Saint Albans 14

Now past two-thirds stage, Latin America's biggest dam will bring hydroelectric power to vast jungle area. President Aleman dam will also harness floods, irrigate crops, and keep the Papaloapan river navigable. Mexico's largest contractors, Cia. Constructora El Aguila,, S.A., have the $20 million job well in hand.

Shift Quarry Operation to Ocean Bottom — by George F. Burnley 22

Dredge Builds Industrial Fill in Tacoma — by A. R. MacPherson 23

1.5 million yd. operation to provide 80 acres of new industrial sites at port area.

Drive to Ready Lone Star Steel Plant — by Edward F. London 24

Houston contractor, Brown and Root, Inc., outdistances contract dates in construction of new Lone Star, Tex., plant for Lone Star Steel Co. Firm pushes $73 million job to slice 6 months or more from scheduled completion time.

Dozers Crumble Valentino Mansion 34

City Plans Step-By-Step Sewer Program — by Albert S. Keshen 36

Stamford, Conn., engineers stick to clay pipe in extending sanitary sewer system. $680,000 contract aids growth of 75,000 population community.

News from the Field 41

Safety Congress to Meet 41
Portland Cement Group Promotes A. A. Anderson 41
Colorado Association Moves ..41
Award Army Trailer Order to Pressed Steel Car Co. 41
Revised Handbook Ready for Uranium Prospectors 42
Equipment Association Moves Offices 42
12 Months' Steel Output Tops 19th Century Total 42
Term Giant Tire "World's Largest" 44
Contract California Dam 44
Construction Association Opens Kansas City Office 46
Aerial Tractor Delivery Meets Success in Oregon 46
Depict Mobile Living in Trailer Association Film 47

Equipment You Ought to Know About 48

New Trade Literature 56

Not in the Contract 59

Notes from the Manufacturers 62

COPYRIGHT 1952 BY THE EXCAVATING ENGINEER PUBLISHING COMPANY

Regular Subscription (payable in advance): 35 cents per copy, $3.50 a year; Canada and foreign, subject to publication policy, $5.00 per year. Special subscription: Upon written request on company letterhead this publication will be sent free of charge to companies, executives and supervisors engaged actively in excavating. Occupation of subscriber must be given for all subscriptions, paid or special. Right is reserved to refuse foreign subscription. Indexed by Engineering Index, Inc. Volumes available on microfilm.

Published Monthly by

THE EXCAVATING ENGINEER PUBLISHING COMPANY

South Milwaukee, Wisconsin, U.S.A.

E. M. HEUSTON, Publisher
W. C. VAN DYKE, Editor
M. B. JAEGER, Managing Editor
H. A. BURKHARDT, Sales Manager
E. W. ARNDT, Art Editor
E. R. KRYMKOWSKI, Assistant Editor

ECA Member Controlled Circulation Audit

Let's Call Wire Rope Constructions

by their Right Names!

This is a message of importance to every user and purchaser of wire rope. It is information that will help eliminate much of the past confusion over wire rope terminology.

How did this confusion arise? Let's illustrate briefly. For years 6 x 19 has been just a name for a variety of six-strand ropes, few of which actually have 19 wires per strand. As an example, our popular 6 x 19 W has always contained 25 wires per strand; the 6 x 19 U, 21 wires per strand. The 6 x 19 Seale, on the other hand, really does have 19 wires in each of its strands. Until recently, the letter or name following the numbers denoted the actual construction; but many users did not know this, and the omission of these symbols occasionally resulted in costly misapplications.

To clarify matters in the various classes of rope, Bethlehem has revised the entire list of misleading designations. For instance, in the Bethlehem terminology, Type W rope is now designated—accurately—as 6 x 25 W (not 6 x 19); Type Q is 6 x 41 Q (not 6 x 37). This completely accurate terminology applies to each and every rope that Bethlehem makes.

Nothing has been changed but the designation. The ropes are made to the same high standards of Bethlehem quality. *Constructions are the same as in the past.* Only the names, the designations, are different. The numbers now mean what they say.

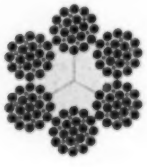
We earnestly solicit your help in publicizing this information. The transition now under way is one that has long been needed.

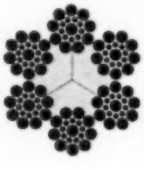
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

6 x 25 Type W	6 x 21 Type U	6 x 19 Seale





Of these three ropes, Seale is the only one with 19 wires a strand. Yet for years all three types have been known as 6 x 19. This is not an isolated case. Similar instances occur in other classifications of rope.

SHOVEL
CRANE
DRAGLINE
PULLSHOVEL

It's another

NORTHWEST

Successful Contractors Stay Successful With Proved Equipment

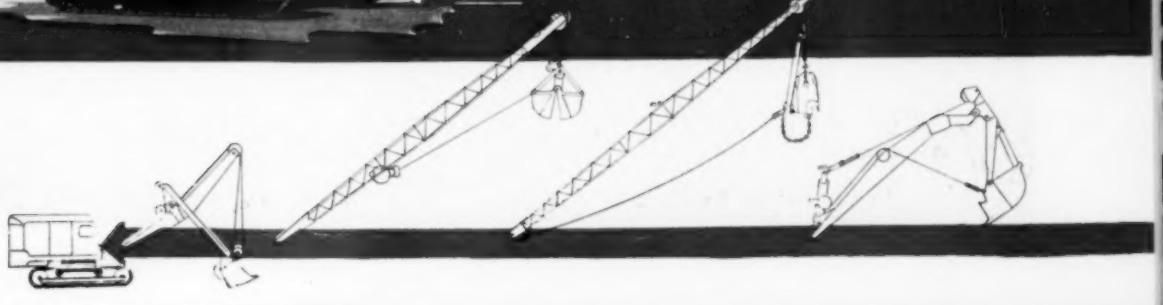
full efficiency in each classification

Putting a shovel boom on a crane or vice versa doesn't necessarily mean that you get an efficient machine for the class of work you want it to handle.

Northwest pioneered convertibility. Northwests have always been built with convertibility in mind—not just with the idea of a boom change but with the idea that the basic equipment will combine with the boom equipment for full efficiency in performance. Your Northwest is not just a Shovel, Crane or Dragline on which another boom can be installed as an after thought.

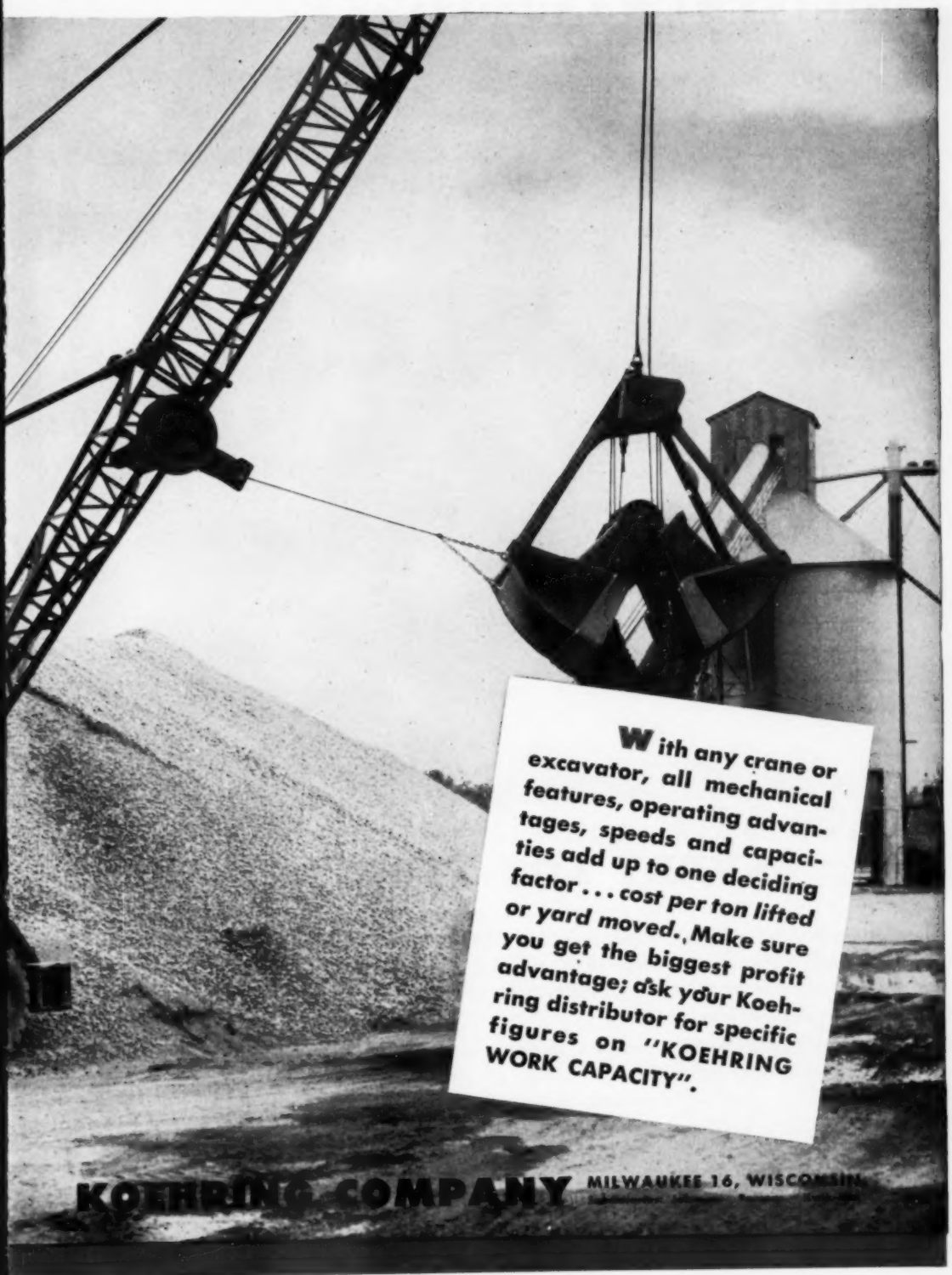
When you have a job to do you know you can do it smoothly and at the lowest possible cost with a Northwest. You can plan to put a Northwest on your job. Talk it over with a Northwest Man and join the Northwest Crowd.

NORTHWEST ENGINEERING COMPANY
1606 Field Bldg., 135 South LaSalle Street, Chicago 3, Ill.



You owe it to yourself to check...

"KOEHRING WORK CAPACITY"


With any crane or excavator, all mechanical features, operating advantages, speeds and capacities add up to one deciding factor . . . cost per ton lifted or yard moved. Make sure you get the biggest profit advantage; ask your Koehring distributor for specific figures on "KOEHRING WORK CAPACITY".
KOEHRING COMPANY
MILWAUKEE 16, WISCONSIN

PROGRESS IN EXPLOSIVES . . .

EVERY LOT TESTED

Here are some of the samples of explosives taken daily at one Hercules plant. Every day, at every plant, samples of each lot are analyzed and tested for conformity with Hercules' strict chemical and physical standards.

Sensitivity, consistency, water resistance, moisture content, density, percentages of various ingredients . . . these are some of the exacting laboratory inspection standards that must be met.

From raw materials to packaged products, Hercules' progress in explosives assures better blasting performance and helps to lower blasting costs.

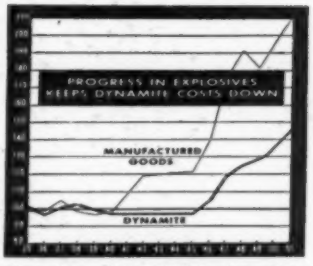


Chart shows relative stability of dynamite prices since 1935, as compared with prices of other manufactured goods. 1935-39 values=100.

HERCULES POWDER COMPANY

INCORPORATED

Explosives Department, 972 King St., Wilmington 99, Del.

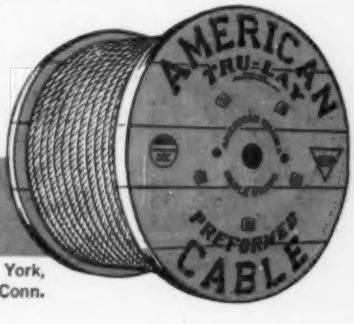
an ACCO product

TRU-LAY Preformed WIRE ROPE

● For each use there is *one best* wire rope . . . one that will stand repeated loading, abrasion, crushing, or continuous bending, and be the best rope to buy.

To achieve this, there is a TRU-LAY Preformed Wire Rope made in a special construction for your equipment. This construction has the exactly right combination of strength, bending life, and resistance to wear and crushing that you need.

The one best wire rope . . . TRU-LAY Preformed . . . will last you longer and cost less to use. Specify and get TRU-LAY Preformed improved plow steel—the rope identified by the Green Strand.



ACCO

TRADE MARK

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

BIGGER PROFITS

These three great tractors make your idle four wheel cable scrapers *PAY OFF AGAIN!!*

Put your idle four wheel cable scrapers to work behind an M-R-S tractor and make them pay off again better than ever. M-R-S offers all the advantages of high-speed rubber WITHOUT THE SINGLE PURPOSE CHARACTERISTICS of specialized units. And there is an M-R-S tractor for any size or make scraper up to 20 yards struck capacity.

M-R-S 125 — 125 H.P.

Recommended as a prime mover to self-load up to an 8 yard struck scraper or as a prime mover for up to a 13½ yard struck four wheel scraper pusher loaded.

M-R-S 150 — 200 H.P

Recommended as a prime mover to self-load up to a 10 yard struck scraper or as a prime mover for up to a 17 yard struck four wheel scraper pusher loaded.

M-R-S 190 — 275 H.P.

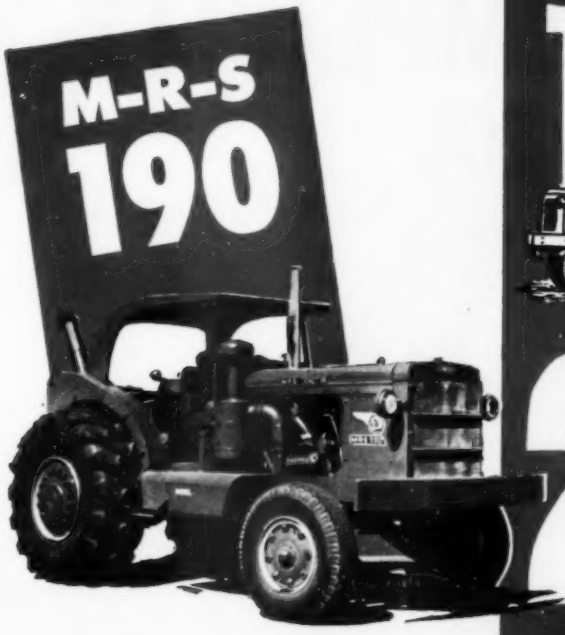
Recommended as a prime mover to self-load up to a 12 yard struck scraper or as a prime mover for up to a 20 yard struck four wheel scraper pusher loaded.

THE EMBLEM M-R-S OF DEPENDABILITY

MANUFACTURING

Sold in all Foreign Markets Through **INTERNATIONAL HARVESTER EXPORT COMPANY**

WITH M-R-S



M-R-S offers high production plus lower equipment first cost!

Large scrapers normally used behind crawler type tractors may now be "switched" to fast, economical M-R-S rubber tired power. This interchangeability between M-R-S tractors and crawler type tractors allows high production on long or short hauls and greatly reduces equipment inventory and investment.

Write for complete information NOW!

COMPANY

FLORA AND JACKSON, MISSISSIPPI, U. S. A.

BIG 3

1 EXCLUSIVE M-R-S WEIGHT TRANSFER

Exclusive WEIGHT TRANSFER provides additional drive axle weight which increases the contact area of the soft low pressure drive tires approximately 40%, producing superior traction.

2 TURNING CIRCLE OF ONLY 28'-34'

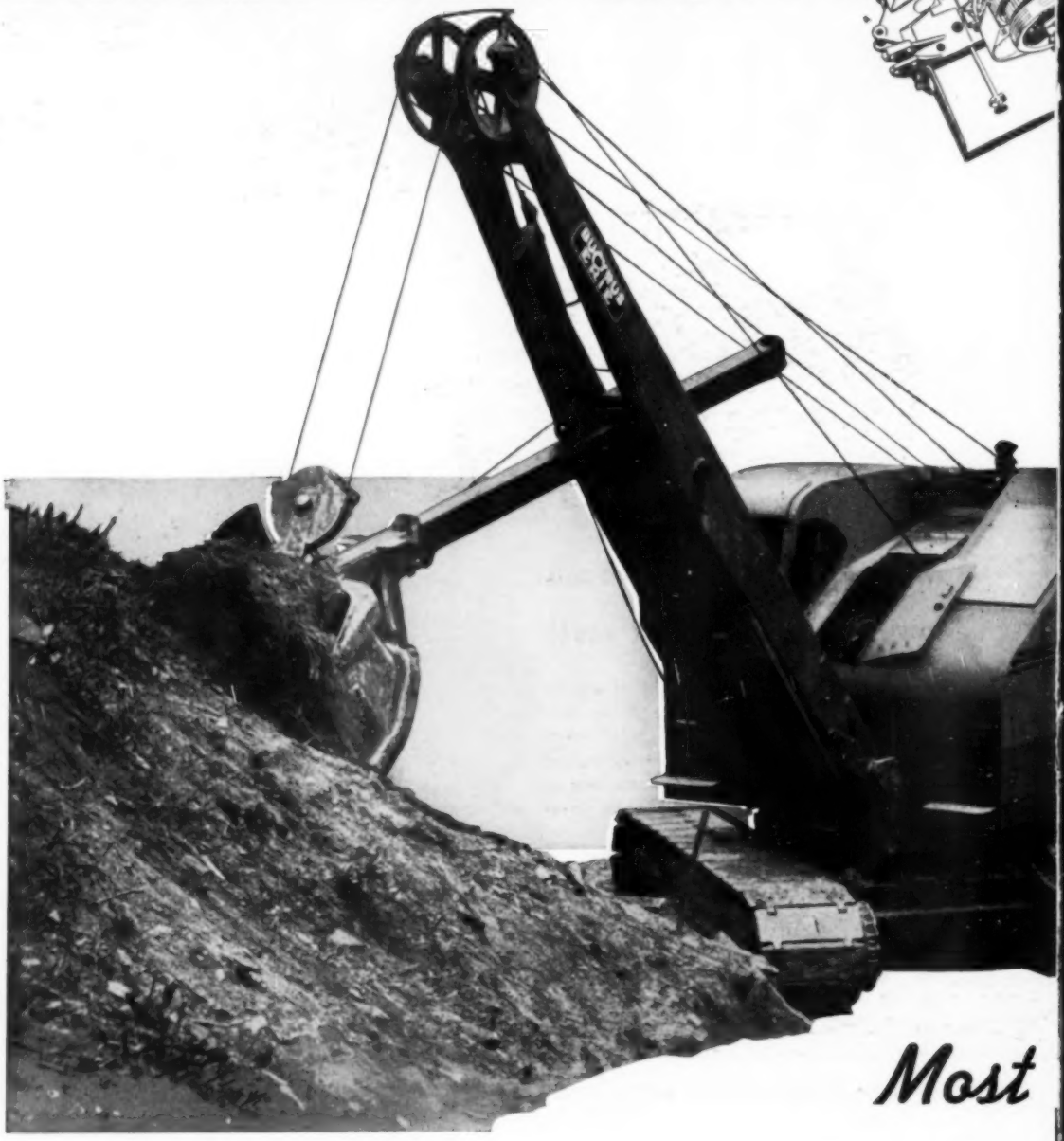
Tight turning circle and high maneuverability of M-R-S tractors when used to power rear-mounted scrapers or bottom dump Middletype Wagons makes it ideal in construction of narrow secondary roads.

3 GREATER VERSATILITY

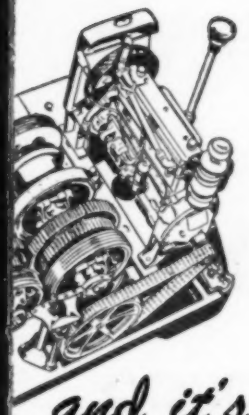
M-R-S tractors are ideal rubber tired power for bottom dump Middletype Wagons, heavy compacting rollers, machinery trailers, or for general utility.

Now...

DESIGN SIMPLICITY



Most



counts more than ever . . .

and it's yours with BUCYRUS ERIE *excavators*

From boom point to treads, the advanced engineering of Bucyrus-Erie excavators shows up in neat simplicity all along the line. They're trim and compact, have no excess weight; this means easy handling, fast operating. With lightness they combine great strength; this means low maintenance, real dependability. Machinery is conveniently arranged, accessible; this means it's easy to keep a Bucyrus-Erie in top working condition.

This basic design simplicity pays you extra dividends in big output and long service life. Today, with critical materials for new equipment in short supply, that's more important than ever.

56E52C

HOW TO MAKE YOUR EXCAVATOR WORK HARDER . . . LAST LONGER

Write now for a new 32-page booklet loaded with valuable hints on:

- Preventive Maintenance
- Lubrication
- Adjustments
- Engine Care
- Safety . . . and many other important topics

BUCYRUS-ERIE

SOUTH MILWAUKEE, WISCONSIN

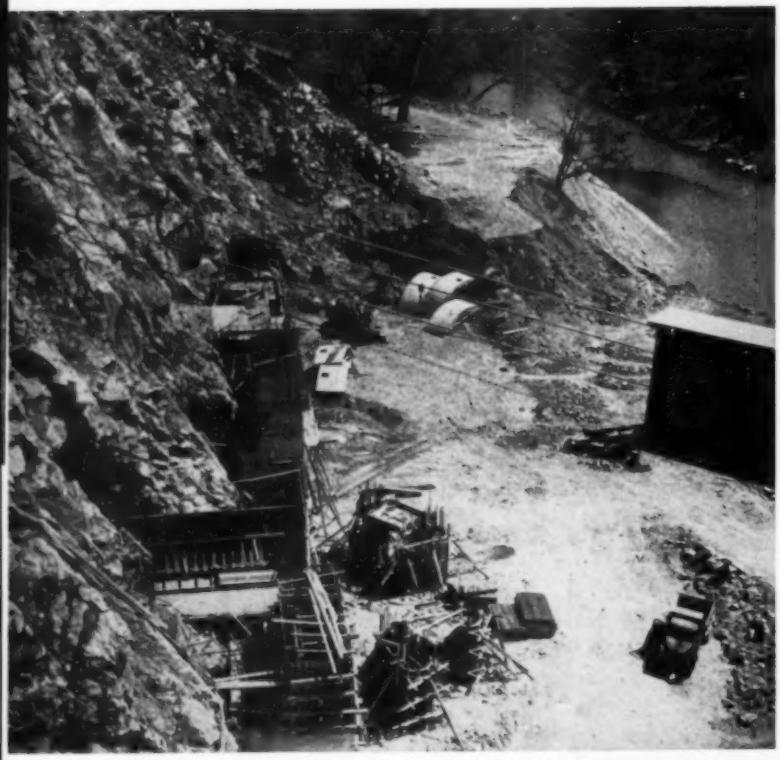
¾-TO-4 YD. GASOLINE, DIESEL, SINGLE-MOTOR ELECTRIC EXCAVATORS
HYDROCRANE-HYDROHOE

Compared - Most Preferred

Excavating Engineer
founded 1905 · SEPTEMBER, 1952

President Aleman Dam: More Power for Mexico

by Mary Saint Albans



● To left of Tonto River is entrance to four tunnels. Lateral tunnel joins the four to provide gallery for operation and emergency valves.

IN the sultry jungleland of northeastern Oaxaca, where monkeys and parrots chatter in forested hills, the great President Miguel Aleman dam is more than two-thirds completed. Latin America's as well as Mexico's largest dam in the building, it is without doubt, the entire Western Hemisphere's most ambitious irrigation project in a tropical jungle.

This is the first of a series of river barricades scheduled to service 17,600 square miles of Papaloapan river basin which comprises parts of the states of Veracruz, Oaxaca and Puebla. This dam and those to come have four objects: To control devastating floods, generate hydroelectric power, keep Papaloapan river navigable to its headwaters, and irrigate vast areas of virgin soil in surrounding dry regions. In short, the plan is to make this basin a great productive center.

To this end, roads and schools are already completed or under way, medical units have been established, factories brought in, and cuts made in river loops to discourage floods and shorten travel time. Already the cultivated area has been increased in the San Cristobal area by one-third. As direct proof of progress, a luxury, air-conditioned hotel now clings to the banks of the Papaloapan in the small village of Cosamaloapan.

Cut Path to Site

The dam builders, Cia. Constructora El Aguila, S.A., Mexico's largest contracting organization, first inspected the damsite early in 1950. Representatives alighted at the La Granja railway signal-station, with machetes and axes in hand, to hack through 15 miles of steaming forests and dank ponds to Temazcal. The damsite was called Temazcal after the pueblo or huddle of straw huts which perched on the banks of the Tonto river.

There, tents were pitched and for the first few days, blankets served as beds. To inspect the extensive locale of future operations on the other side of the river, the men swam the stream, returning at noon for a tortilla and bean lunch.

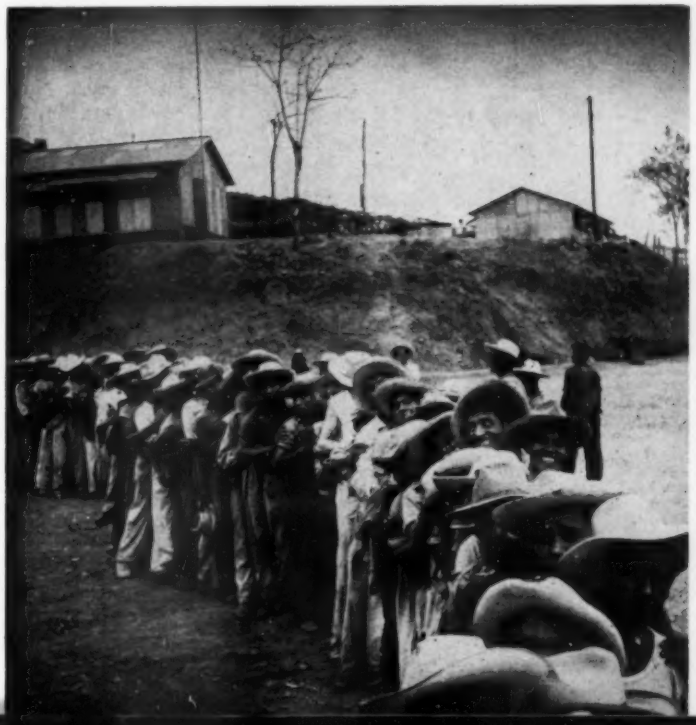
• At far end of embankment, Bucyrus-Erie 54-B shovel works at quarry. First rock materials were used for 33-ft. wide road constructed on slippery and soft tropical jungle soil.

Soon, several Caterpillar D8 tractors with dozers cut a temporary road to the damsite. Chevrolet and Ford trucks brought in materials for sleeping quarters, shops, warehouses, a hospital and dining room.

Shovels Move In

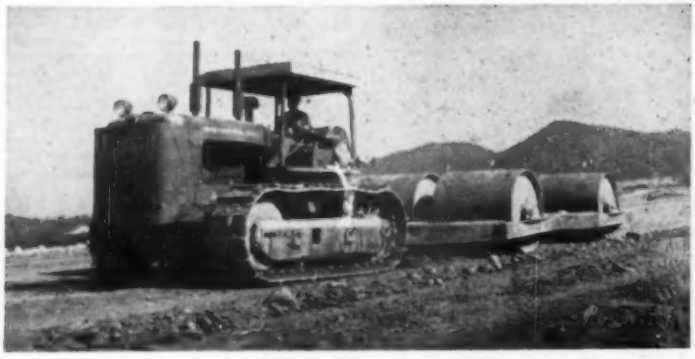
The first big equipment to move over the road on its own power were two P&H's and two Lorains, all 2-yd. shovels. One P&H was immediately barged across the river to a quarry pit staked out on a straight-up hill about a mile from the general offices. One Lorain went two miles up the river to Playa Lagarto (so-called because of the prevalence of alligators) to excavate gravel and sand. The second Lorain and P&H were put to digging the channel for the diversion of the Tonto River. Here 550,000 yards had to be excavated. A 100-ft. long, 30-ft. protecting high wall erected on the

Now past two-thirds stage, Latin America's biggest dam will bring hydroelectric power to vast jungle area. President Aleman dam will also harness floods, irrigate crops, and keep the Papaloapan river navigable. Mexico's largest contractors, Cia. Constructora El Aguila, S.A., have the $20 million job well in hand.



• This shoving line interspersed with gleaming teeth can mean only one thing; payday, a regular event every 10 days. Behind the men part of their restaurant is shown. First few days of Aleman operation saw blankets used as beds. Now company dormitories provide shelter.

• Above: Bridge is forming over diverted Tonto River with batcher to rear. Below left: Ing. Carlos Ramirez Ulloa is technical director of Cia. El Aguila. Below right: General Superintendent Ing. Jose Arias takes early morning look at work.



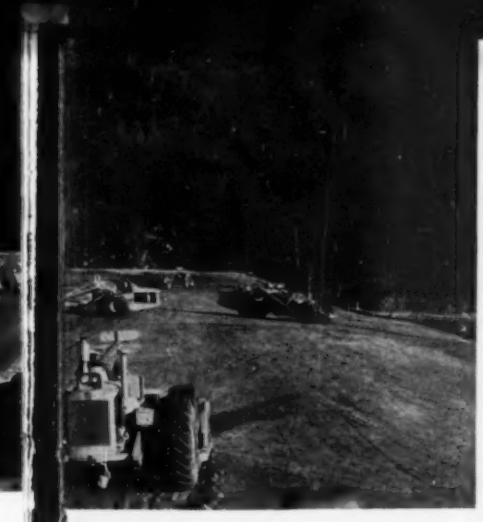
• International TD-24 draws Southwest rollers for embankment compaction. Because of frequent rains, use of sheepfoot rollers has been vetoed since resulting holes require four days of hot sun to dry.

side was studded with weep holes to allow for drainage.

The first materials from quarry and river bed were used to construct permanent roads throughout the extensive area of operations. This included a 15-mile road to La Granja. As future schedules called for the placing of 260,000 yards of rock and 460,000 yards of earth per month in times of greatest activity, such constant pounding demanded a solid base.

Rock from the quarry was dumped on a 33-ft. wide road to a thickness of from 2 to 3.3 feet. This was spread by Caterpillar tractors, and compacted by 25,000 lb. rollers. On top went a layer of gravel saturated with water. Tractors, motor graders, and rollers spread and compacted this course. Rock and dirt laden trucks hauling to dam and dike locations completed the final compaction. Nevertheless after two torrential rainy seasons, sections of the road, which received the heaviest punishment, sank into the clay below. Another layer of stone had to be dumped and compacted.

In this humid tropical jungle, rotted vegetable matter comprises the surface soil. Underneath, slippery as grease and of no use whatever for construction, is a layer of humus soil and black earth. Below this, the red earth, called arcilla, from 6 to 66 feet in thickness, proved satisfactory for dam and embankment cores. Next is a transition layer of yellow earth, entirely different in texture from the arcilla and mixed with fragments of limestone. Finally comes pure limestone which is badly cracked and faulted, often going hun-



• Tournadozer and three Tournapulls with scrapers make embankment core. In background Allis-Chalmers motorgrader swings around.

dreds of feet deep.

The cost of the dam and spillway, will be about $20 million.

The main job is in two sections, dam embankment and dike. The former, measuring 2,700 feet runs into a huddle of hills which carries on as a natural barrier for 1¼ miles to join the 7,500-ft. long dike. Two and one-half miles from the end of the dam embankment is the spillway on which work is just commencing.

Big Yardage Job

The earth and rock fill dam proper contains 2.3 million yards of red earth, 2.4 million yards of rock. The dike, contains 4.3 million yards of arcilla and 1.8 million yards of rock. The dike crown is 33-ft. wide, the dam crown 33 feet. The dam is 230 feet high above its lowest point; the dike is 115 feet high. Both are 230 feet above sea level with the dike located on higher ground.

A core of red earth is followed by a thin transition layer of random materials, topped by a thick rock fill. Two quarries, one across the river, the other at the far end of the dike provide ample and satisfactory rock. Borrow pits are located between dike and campsite.

Two 2½-yd. Manitowoc shovels were brought in and the P&H on quarry detail was sent to the river channel to dig, the Manitowoc went on the quarry job. Three Lorains got the job of digging the arcilla for the dam proper and two Bucyrus-Erie 54-B's with Amsco, 2½-yd. dippers and Buda Diesels were assigned to the dike quarry. Shovels and other heavy machinery were barged across the river on a chalan or raft.

After the Tonto river was diverted into its new narrow channel, operations were begun in the main river bed. Peerless and Jaeger pumps were used to handle seepage. Concrete was brought down in dump trucks from a Koehring batcher to fill rock crevices and cracks. In hard-to-reach places a 4-yd. Blaw-Knox concrete bucket was used. The batcher powered by two Waukesha engines had two 14S mixers.

Later, five Manitowoc shovels and a third Bucyrus-Erie 54-B equipped with a dragline arrived as did a fleet of Tournapulls and Tournarockers. The latter to save time and money came on their own power from the border at Laredo, Tex., making the 1,125-mile trip in 68 hours.

In March, three shovels were digging in the dam trench to excavate large areas of bad rock. In this sector limestone was faulted and cracked and beset with small canals and crevices. Consequently it was necessary to excavate 650,000 cubic yards of material from the dam proper.

In two days, three shovels loading into Euclids excavated 8,000 yards; a D-8 tractor did the clean-up job; an International TD-24 pulled a Southwest sheepfoot roller over the excavated section. Near the entrance just out of the way of the Euclid fleet rumbling by, four diamond drills dug grout holes.

Straight ahead above this trench four Chicago Pneumatic portable compressors powered with Caterpillar D-1300 engines each delivered 500 cfm to 25 Gardner-Denver S55 jackhammers on the hill above. In all, there were twelve of these compressors, besides three stationary Chicago Pneumatics, with 650 cfm Y-type, capacity and four stationary Chicago Pneumatic "O" type compressors delivering 1,200 cfm.

An electric power plant with Westinghouse turbines at La Granja provided 3,000 kw for light and power. Three Caterpillar Diesel light plants, used when work started, were still on the job.

Hazardous Weather

The elements are a problem. In late spring and summer, heat reaches 108° F. which coupled with intense humidity is almost more than a working man can take. The word Temazcal means steam bath in Indian parlance and that's what the dam and village and surrounding jungle feel like several months of the year.

To meet exacting construction schedules, however, rains are the greater hindrance. These occur almost all year around, with April and May the only dry months. In one day, rainfall

• Right: Tournarocker rushes part of 2.4 million yards of rock fill from quarry to damsite. Two nearby quarries provide ample and satisfactory rock. Below: Caterpillar DW10 and Athey wagon unload at embankment.

• Above left: Manitowoc 2½-yd. shovel loads Tournarocker for trip across river. In background is village of Temazcal with workers living quarters to right of town. Above: Lorain dragline with Blaw-Knox concrete bucket works on Tonto River bed. Above right: First pit of dam ready for backfill (foreground) with second pit (directly ahead) partly complete.

• This 200-ton capacity barge drawn by tug, moved 80-ton Bucyrus-Erie 54-B across Tonto River.

• Construction Engineer Vicente Orozco studies results of big floods.

can total 8.3 inches; in a year, 85 inches.

During the heaviest rainy seasons, the earth fill activity is cut 50% and the rock fill increased in proportion. One or two shovels are transferred from borrow pits to quarries, the Tournapulls being unhitched to be replaced with Tournarockers.

For the 50% earthfill job still going on, a highly satisfactory technique has been evolved. After a hard rain it takes four days of hot sun to dry holes made by sheepfoot rollers. These, therefore, have been banned from earth-fills in favor of smooth rollers. Foremen who have had to acquire a critical eye, can foretell a storm's breaking for from one to three hours before the skies open. They order all excavating and dumping stopped and rush the leveling of mounds, spreading and compacting. Generally when two passes have been made by heavy rollers, before the downpour starts, the water does not penetrate to a critical degree.

Specifications require that every 6-in. course of loose earth shall be given 12 compaction passes. When this schedule is executed and the degree of inclination is satisfactory, transverse and lengthwise, moisture from a heavy rain can penetrate only one inch more or less.

According to Ing. Arias, the general superintendent on the job, one of the big problems is obtaining the minimum compaction desired which is 95%. To insure this minimum, the moisture in the arcilla must be about 28%. A variation of 3 or 4% more or less lowers the compaction to 91%.

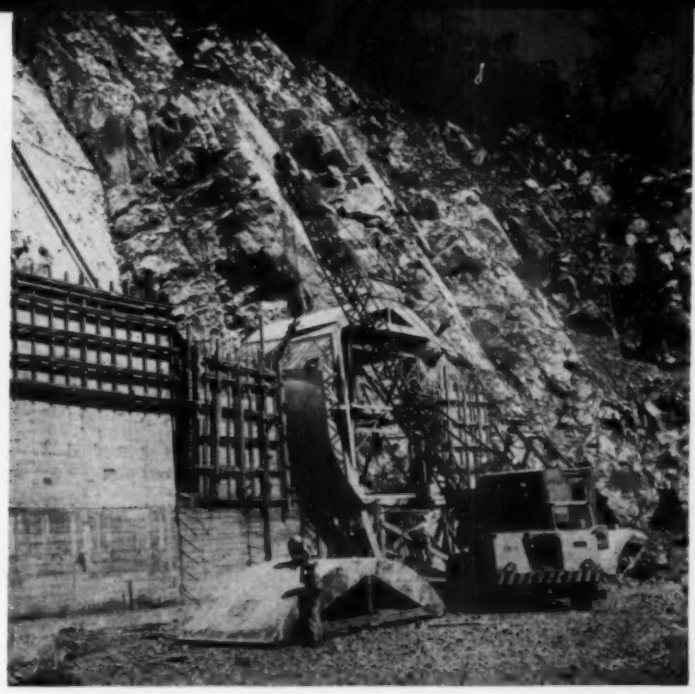
Sun Dries Pits

Fortunately when good drainage grades exist with no small pools of water, three hours of sun dry the earth sufficiently to receive more impervious material. The exact time for dumping new arcilla is dependent on the borrow pits which take longer to dry out. Three hundred acres and more have served or are serving as borrow pits. Dozers strip unusable earth and develop grades in the pits.

Work is progressing at a good rate on the dike. A 4-ft. wide cut-off runs through the center with grout holes from 10 to 164 feet deep. Chicago Pneumatic 55N diamond drills sink grout holes every ten feet. Gardner-Denver compressed air driven pumps send down concrete. From 4 to 1,200 sacks have been used to fill each cavity. If more than 500 sacks are used, two other holes are drilled between on 5-ft. centers. If these, too, take more than 500 sacks, more laterals are drilled.

Total length of grout holes in dike and dam embankment is two miles; combined length of grouting is 14 miles. Jose Rangel Rojo is the foreman on the cut-off dike job.

A fleet of Tournarockers and Caterpillar DW10 wagons working under two Bucyrus-Erie 54-B's operate between quarry and dike. In the borrow pit between dike and camp, Tournapull scrapers dig and haul to fill. At the far end of this pit the wagons work under a 2-yd. Lorain. Grading equipment at the dike includes motorgrad-



• Bay City Kranemobile lifts forms for tunnel (No. 4) portal.

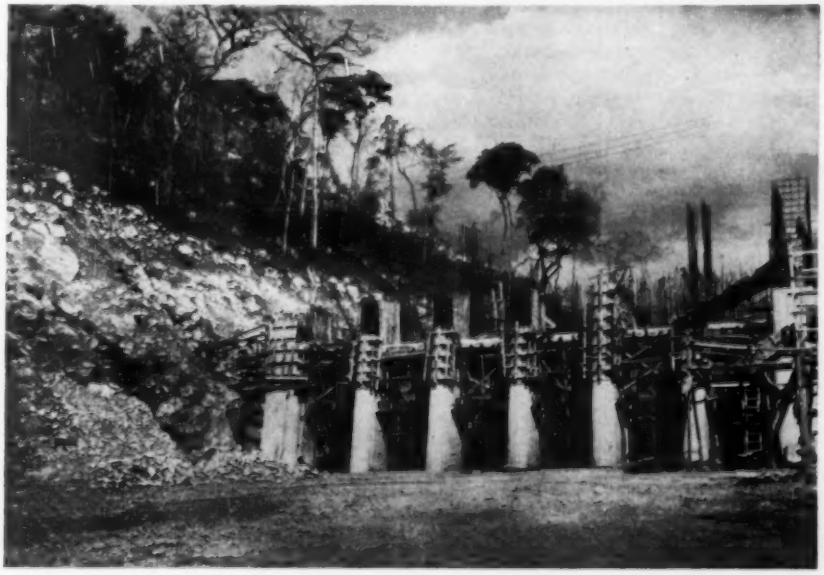
ers, Tournadozers, two International TD-24's pulling Southwest smooth rollers, a water tank on a White truck, Caterpillar tractors.

Up the Tonto River at Playa Obispo, about five miles from the damsite, a Bucyrus-Erie 54-B swinging a Hendrix bucket digs gravel to load into Athey wagons. Caterpillar Diesel units take the loads to the Pioneer screening plant on the hill above the general offices in a 23-minute uphill climb. Return trip requires 17 minutes.

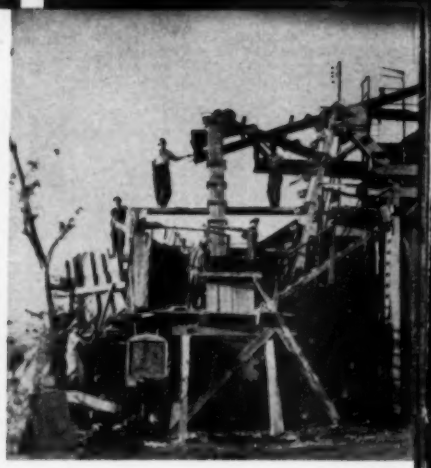
Concrete Plant

Gravel and sand after being screened is taken to the Blaw-Knox batching plant operating above and to one side of the tunnel portals. This plant is equipped with three GMC mixers and two made-in-Mexico hoppers. Special trains bring 5,000 tons of cement from Mexico City every month. Part of it goes into the battery of silos constructed on a spur at La Granja. These load cement into Fruehauf bulk cement bins called *cafeteras*. They are drawn by Autocars to be emptied into the batcher. Dodge rear-dumps carry the wet concrete into the tunnels where Link Belt equipment takes over to fill a Rex pumpcrete, which pushes it through an 8-in. pipe, into the metal forms.

Three Chicago Pneumatic Jumbos, each mounted with 60N Chicago Pneumatic drifters, drilled the tunnels. After blasting, Eimco 104's scooped up loose material to load into Koehring



• At high intake end of long embankment, water will be admitted to main canal.



• Above: Chicago Pneumatic wagon drills work on exit tunnel No. 3. Powerhouse will be built in this low level intake. Left: Five miles from damsite up the Tonto River, Bucyrus-Erie 54-B loads gravel into Athey wagon pulled by Cat DW10.

dumptors. The four tunnels add up to over 2,200 yards in length. A lateral tunnel joins the four to provide a gallery for operation and emergency valves. Excavation work will be completed in eleven months and all concrete laid in four months. However, as some work on both jobs goes on simultaneously, the four tunnels are expected to be completed in thirteen months.

Power Plant and Canal

At the lower outlet, a big powerhouse will be erected. In March a Cat D4 was pushing muck from Tunnel No. 1. Four Chicago Pneumatic 70N wagon drills were making an exit for Tunnel 3. The total excavation for entrance and exit of toma baja or the outlet is 1 million yards. Concrete in tunnels and structure will total 78,500 yards.

At the far end of the dike is the upper main canal structure where 13,000 yards of concrete is being poured. This canal will carry water to the extensive system of lateral canals to be dug in the future.

Quarry blasting is carried on via the coyote system, from 26,000 to 523,000 cubic yards being loosened on each job. Granulated dynamite and 40% extra are used at a rate of 3,000 boxes a month. Calculations follow one of two methods which are chosen according to topographical or geological conditions. Either 28 lbs. for every square yard of surface is used or the total cubic yards to be blasted is estimated and 0.7 lbs. is exploded for each cubic yard of rock.

The DuPont powder is manufactured by Cia. Mexicana de Explosivos, S.A. The company representative, John Blegg, visited the job many times and gave valuable help in working out the above system which has proved very efficient.

Because the limestone is so faulted and cracked, blasting often results in rocks too large to be handled by the dipper. At least 10% has to be drilled and reblasted. Larger dippers could have been used but they were not quickly available.

There are two shifts of 10 hours each. The four extra hours each day are devoted to machinery maintenance. Workers take their half hour lunch period right on the job at 9 in the

• Lorain with 4-yd. Blaw-Knox concrete bucket works on damsite in Tonto River bed.

• Antonio Marce (left) purchasing agent and Jose Bertran, president of Cia. Constructora El Aguila S.A. visit construction site.

• This Pioneer screening plant handles 60 tons of gravel an hour.

morning, 2:30 in the afternoon, 12 on the night shift. Food is sent from their homes by lunch-carriers paid by the company.

One boy carries lunch for 40 men; as there are 4,000 workers, it adds up to 100 boys. Lunch containers made up of several sections, carry coffee, meat, beans, rice and tortillas. One man is selected from each group of workers to build a fire, before the meal siren blows. The company sees that there is old wood available in order that good lumber will not be appropriated. The men heat tortillas, coffee, and other foods. Ing. Orozco deplores this system, particularly the cost of 100 lunch carriers. But he says the men want food from their own *casas* (homes). It's good food, hot and tasty and much superior to the U. S. sandwich.

Workers receive their wages every ten days, standing in line for cash payments. Three times a month Major Ivar Hiort of the Mexican Army and two soldiers bring ½ million pesos from the port of Veracruz in a pickup truck. The round trip takes a full day.

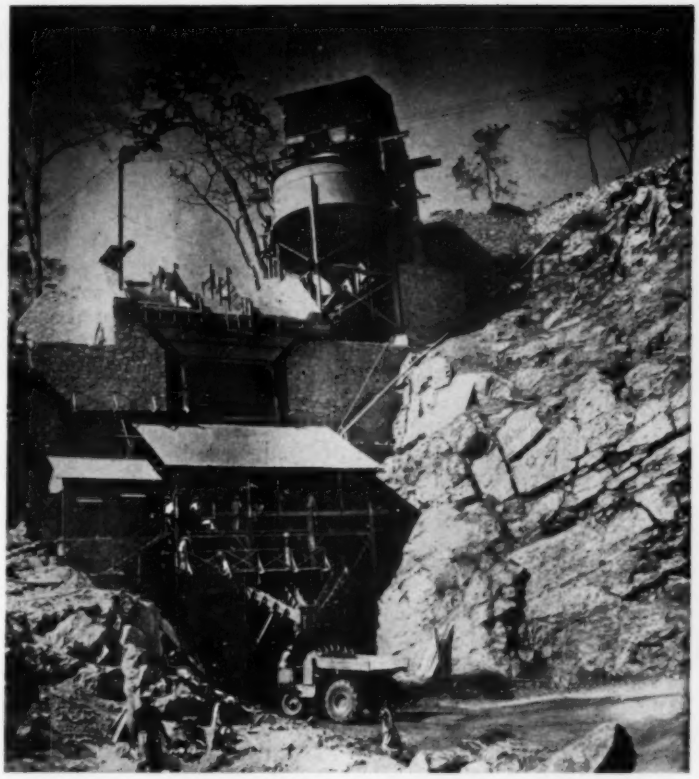
Married workers occupy small houses built by the company. Single ones live in dormitories. A movie, pool hall and the like are provided and swimming in the river is an every-day diversion.

A hospital with two doctors and six nurses takes care of the sick. It also looks after the health of wives and children.

Three times a year the entire camp settlement is given a rigorous DDT residual treatment. All puddles and ponds are covered with burnt motor oil. Although this is a malarial region and most of the workers coming from higher regions are susceptible, there have been few cases reported.

A big dining-room opposite the long general office building is open all day and half the night, serving meals or cold soft drinks. On the hill a small dining room is reserved for engineers and guests.

Over this hill, towards the dike, are the general offices, hospital, living quarters of the Comision del Papaloapan. Here engineers check specifications for the dam. Ing. Salvador Mendieta A. is technical supervisor.



• Blaw-Knox batcher with three C.M.C. mixers loads mix into Koehring Dumptor at tunnel entrance.

• Ing. Guillermo Pliego is superintendent of dam and tunnel work.

The president of the Comision del Papaloapan is the Secretario de Recursos Hidraulicos (head of irrigation for Mexico), Ing. Adolfo Orive Alba. The executive director in charge of all Papaloapan basin development is Arquitecto Luis Gonzalez Aparicio.

In Mexico City the technical director of Cia. El Aguila is Ing. Carlos Ramirez Ulloa; the general manager, Sr. Ing. Rafael Aburto; president of the contracting company, Sr. Ing. Jose Bertran C.; Ing. Vicente Orozco as construction engineer visits the dam every week.

At the damsite, general superintendent is Ing. Jose Arias, who is assisted by Ing. Guillermo Pliego I, superintendent of the dam and tunnel work. Ing. Ernesto Toledo is superintendent of the embankment construction. Ing. G. Armuchastegui is the resident engineer.

Shift Quarry Operation to Ocean Bottom

by George F. Burnley

AT Rockaway Beach, several miles south of San Francisco's famed Golden Gate, the Rockaway Quarry Co., Inc., dug its material from a conventional hillside pit from 1940 to 1950. However, in 1948 a thorough investigation of extensive sand and gravel beds directly offshore justified installation of equipment to draw loose material from the ocean bottom.

Technical reports of geologists indicated that the material, which concentrates at one point along the beach, originates in the Sacramento River. Then it is led by the current through San Francisco Bay to the Pacific. Outside, it is thought to be swept by the Japanese Current to this lodging place in a small open cove.

Undertow Causes Trouble

For commercial excavation, on a cliff over the beach, a stoutly guyed mast is erected. To its top a pair of Sauerman slacklines are rigged. One of the 1⅛-in. slacklines (or "baloney" lines) extends to a stationary mooring point at the tip of the cove among surf-washed boulders. The other, the longest, runs down a sharp incline for a distance of some 1,500-ft. to sea bottom. Originally, the line had a length of 2,000-ft. but powerful undertow and heavy use caused it to be shortened to the present length. To overcome further trouble of this kind, divers have placed five 2,000-lb. anchors at strategic points along the smooth bottom. Subsequent experience has shown that a firm mooring resulted.

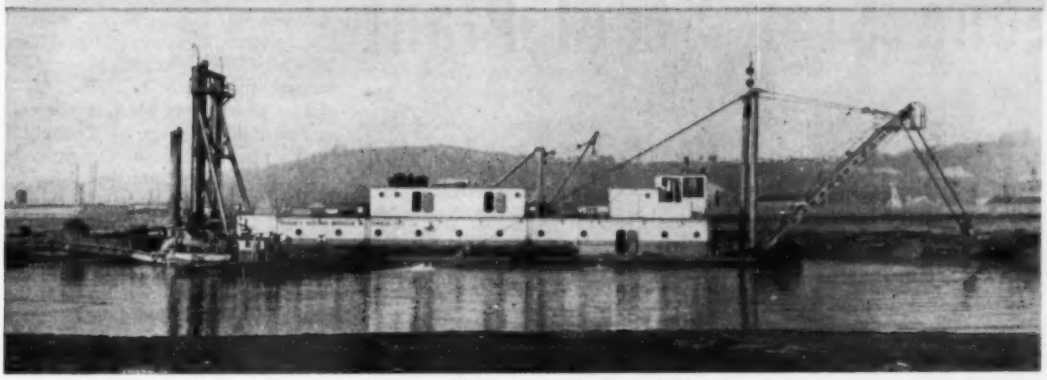
The slacklines are powered, respectively, by an American Hoist gas rig and a Christenson Diesel — both double-drum hoists. Cableway engineers and experienced slackline men who have examined the set-up at Rockaway Beach express surprise that the method works without a tail pulley on either line.

In use, a 2-yd. dragline bucket is let down the line until it reaches the ocean surface. After slacking the line to drop the bucket to the bottom, the dragline hauls it along until engine labor indicates that it is full. Then the slack is taken up on the baloney line. The load is pulled in to the top where it is dumped into a hopper for subsequent transfer to a washing and sorting plant. Later, it is again moved to large stockpiles in a sheltered area over the hillcrest where yard office, scales, and equipment sheds are also located. While the yield runs some 500 tons per working day, fluctuating demands plus the chance of natural conditions ceasing to produce the desired material, have made it essential to maintain a large stockpile.

Yield of the ocean quarry includes two grades of sand—ten-mesh and twenty-mesh down, ⅜-½ in. gravel; ½-1 in. gravel, and an occasional supply of material up to 6 inches. In charge of general operations at present is Harry G. Fishtrom, manager.

● Here are two views of Rockaway Quarry Co. south of San Francisco. A stoutly guyed mast (right) is erected with pair of Sauerman slacklines rigged to the top. Sand and gravel originates in Sacramento River and Pacific Ocean currents carry it to small cove (below).

Dredge Builds Industrial Fill in Tacoma



• Dredge *H. W. McCurdy* working on port industrial waterway project in Tacoma.

by A. R. MacPherson

SOME five years ago the Tacoma Port Commission carried out a 3-million-yd. dredging operation designed to reclaim land in the tide-flats area of the city. The operation provided new industrial sites and a deep water channel with added docking facilities for ocean-going shipping.

Now a three-quarter mile extension is being dredged in the same port industrial waterway to provide another 3,000 feet of industrial waterfront property with some 80 acres of new industrial sites. This will be brought about by the 1.5 million cu. yds. of sand material pumped up by the dredge and deposited on adjacent tide-flats areas.

Contract for the dredging operation was awarded to the Puget Sound Bridge & Dredging Co. of Seattle.

The company is using the hydraulic dredge, *H. W. McCurdy*, the flagship of the firm's fleet of 9 dredges, for this particular project.

Electrically Operated Dredge

The dredge is electrically operated and also capable of generating her own electricity when normal shore supply is not available. With her big pumps, the dredge also pumps the material she sucks up and forces it through a 24 in. pipeline to deposit on sites a mile and more distant from the dredge.

1.5 million yd. operation to provide 80 acres of new industrial sites at port area.

The present 4-month project is designed to deepen and lengthen the port industrial waterway in the immediate area southeast of the East 11th St. bridge. The old bridge over this main industrial arterial is presently being removed by the dredging firm and will be replaced by a modern bascule bridge costing $1.3 million. The new waterway extension beginning at the bridge site is being deepened by the dredge to a low water depth of 30 feet, with a 270 foot width on the bottom. For 4,000 feet east of the bridge the depth will lessen to 20 feet at extreme low tide and a bottom width of 250 feet, all of which will provide a large new waterway for waterfront industry.

Expanding Industrial Sites

Dredged material from the waterway is being used to build up industrial sites on 80 acres of tidelands located on either side of Lincoln Ave. Additional expansion by dredging in this area is already under consideration to provide a minimum of 1,000 acres of future industrial sites.

In the present operation, Link-Belt Speeder equipped with a ¾ yd. dragline bucket is being employed to throw up earth dikes around the perimeters of the fill-in areas. This will contain the inflowing sand pumped up by the dredge through the long steel pipeline. The pipe is assembled in sections and disassembled the same way as the fill-pipe is moved back on the depositing area. Dikes were built to an average depth of 10 feet which allowed for a final compacting sand-fill averaging 6 feet thick.

The *McCurdy* operates at a pressure of 100 psi on a round-the-clock schedule of three shifts, 7-day basis.

• Link-Belt Speeder equipped with ¾-yd. dragline bucket constructs earth dikes around perimeters of fill-in areas. Dredge works in left background.

Drive to Ready Lone Star Steel Plant

by Edward F. London

"INGOT in '52" is the slogan that is sparking Brown & Root, Inc., Houston, Tex., in building a completely integrated $75 million steel plant for the Lone Star Steel Co. of Lone Star, Tex.

Starting the day after Easter in 1951, with completion scheduled for early in the first quarter of 1953, Brown & Root crews and sub-contractors have changed the face of about 200 acres. During this face-lifting operation a forest has been obliterated, swampy sloughs have been filled, and several hill-tops cut off. The entire ½ mile square area has been graded, leveled and compacted, and practically covered with an assortment of large area steel buildings in all stages of construction.

Buildings include the open hearth department, which contains the mold-yard, hot-top building, stockyard and scrap preparation building, high line, skull-cracker and slag yard, a soaking pit and stripper building. The rolling mills and pipe plant areas, including the approach track, slag and pipe storage yards cover an area of 1,085,525 sq. ft. The space is allocated approximately as follows:

Open hearth building	249,975 sq. ft.
Rolling mills	209,175 sq. ft.
Pipe welding and finishing operations	614,375 sq. ft.
Ingot mold foundry	18,000 sq. ft.

Located about 30 miles from Longview, Tex., on State Highway 26, the new steel mills site is just south of Lone Star Steel Company's older facilities. These include a blast furnace, battery of coke ovens, power plant, cast-iron pipe foundry, coke by-products plant, and other related facilities.

The existing mill produces cast-iron pressure pipe, some of it concrete lined and used for city water systems and similar industrial purposes. The new industrial giant, completely integrated with the existing plant will turn out 500,000 tons of open hearth steel ingots a year. The steel will be used to manufacture 350,000 tons of oil field tubular pipe.

This much needed pipe will be produced in two mills. One will produce pipe ranging in diameter from 2 in. to 6⅝ in. The other will handle pipe ranging from 4½ in. to 16 in.

This tremendous plant is the culmination of a dream by Lone Star Steel's president, E. B. Germany. It is unique in that it practically sits on top of an esitmated 50 to 60 year supply of 25 to 30% iron ore. The farthest boundary of the deposit is no more than 22 miles from the plant. Ore is now being mined 7 miles from the plant site. Coal and limestone are available within 200 miles, and natural gas wells are only a few miles away.

Market Close at Hand

Of considerable importance is the fact that all but 15% of the potential market for steel oil-field pipe exists nearby.

The new plant, financed by an RFC loan of $73 million, is under construction by Brown & Root, Inc., on a cost-plus fixed fee basis. Total value includes purchase of approximately $40 million worth of machinery and equipment. Plans, specifications, and engineering supervision are being handled by A. J. Boynton, Chicago engineering firm, with A. P. Ready, resident engineer in charge.

Project manager for Lone Star Steel

• Caterpillar maintainers, model 12 and model 112 (left), are shown leveling grade. Dumped material is iron-ore gravel which will be used on permanent and haul roads.

Houston contractor, Brown and Root, Inc., outdistances contract dates in construction of new Lone Star, Tex., plant for Lone Star Steel Co. Firm pushes $73 million job to slice 6 months or more from scheduled completion time.

• Northwest Model 6 dragline excavates ditch for 6-ft. diameter concrete pipe. Bottom of ditch is compacted by Tampo "Wobble Wheel," drawn by International Farmall Tractor.

Co. is C. H. Kruetziger, who represents the owners in the construction of the plant. He will get steel production underway when the job is turned over on completion.

Completion of the Lone Star expansion will increase the plant's personnel from about 1,500 to more than 3,000. The firm's annual payroll will rise from approximately $4 million to almost double that figure.

Careful planning went into the selection of a site for the plant in order to place the producing units on high ground with a maximum advantage of natural, well compacted clay, which is available on the site. The open hearth plant has been located about ¼ mile from the rolling mill and pipe plant. This distance will be traversed by ingot cars carrying hot steel ingots from the open hearth furnaces.

The open hearth plant will include four furnaces rated at 188 tons per heat. These furnaces, housed in a conventional open hearth building, are of standard construction equipped with basic ends, and are arranged to fire with natural gas. The building over the charging equipment will be 600 feet long x 85 feet wide. The building where the steel is turned into ingots is to be 550 feet long x 74 feet wide. Included also is a lean-to and porch structure 675 feet long x 57½ feet wide. Among the equipment in the open hearth plant will be a 125-ton hot-metal crane and two 275-ton pouring cranes, as well as two 10-ton charging machines.

Scrap buggies and other containers handling materials will reach the required elevation in the open hearth

• International TD-24 with Bucyrus-Erie bulldozer clears site of new Lone Star Steel plant. In background, Caterpillar D8 with bulldozer, International TD-14 and two double tamping rollers, International TD-24 and LeTourneau scraper and electric Tournapull work on construction of main road.

• O. L. Finley, assistant superintendent of excavation, and Durwood Greene (right), superintendent of excavation, discuss progress of 2 million yd. earthmoving job. Behind them an International TD-24 dozes earth cover for culvert.

plant by means of a steel trestle highline, built on a curve 1,000 feet long with a grade varying from 2 to 3%.

Other Construction Items

Included in the Brown & Root contract is the building of 13 miles of railroad track, 8,650 feet of roads and parking places, main sewers and drains, water lines and pumping equipment, steam piping, fire protection equipment, gas and miscellaneous piping, yard lighting, telephone systems, and main power distribution system. Car movement within the plant will be handled by Texas & Northern railroad, a wholly owned subsidiary of the Lone Star Steel Co. It joins the Louisiana, Arkansas & Texas railroad at a point about 8 miles north.

Brown & Root will install a 15,000 kw turbine in the present powerhouse and new boilers which will have a capacity of 225,000 lbs. of steam per hour.

Although Brown & Root have the contract for construction of the entire project, as well as the purchase and installation of all machinery and equipment, this article will deal principally with the preparation of the site and other related parts of the contract.

On Easter Sunday, 1951, H. Q. Haile, Sr., superintendent of grading and paving for Brown & Root, stood out in the middle of Highway 26 and surveyed a 200-acre spread of dense slash pine, oak and sweet gum trees, some of them pretty big. He gave a professional examination to the thick underbrush between the trees, the 40-foot-deep ravine and a lot of smaller gullies running through the site. It was his job to clear the ½ mile square area of all vegetation, cut down the hills, and fill, level and compact the new steel plant site to suitable grade.

Now, Hub Haile isn't the kind of man who just stands looking at a job of work. Next day, he moved in five International TD-24 crawlers with Bucyrus-Erie blades to a high spot in the northeast corner of the construction area and started leveling trees. Haile had one break to start with—a young fellow named Durwood Greene for dirt-moving superintendent.

Hub Haile has been in earthmoving a long time, so he knew that the best way to handle the job was to get the right man and give him plenty of good equipment. And the record earthmoving chalked up on this job has proved him right. Although a young man, Durwood Greene has spent 17 years in the business. He lined up a crew of dirtmoving fire-ballers.

Haile recalls a number of highlights which marked the clearing operation. There were three or four nasty creeks in the bottom of the sloughs where equipment got stuck several times. And there was the dense stand of trees to remove. They varied in size from 6 in. to 14 in. in diameter. The Internationals and a couple of Caterpillar D8's waded in with their bulldozer blades high. Trees were felled to bring roots and all out. Trees were cut into suitable lengths with cross-cut saws. Then the dozers moved the debris and thick underbrush into piles for burning.

Large stumps that could not be burned were hauled one at a time with A-frame and winch on flat bed trucks to the disposal area about a mile and a half southwest. Smaller stumps were loaded into dump trucks rented by Brown & Root from local truckers. Some of these were loaded with a Hughes-Keenan side boom mounted on a TD-14.

Start at Open Hearth Site

Clearing began in the open hearth area on high ground just south of the existing steel plant. When there was enough elbow room, scrapers began moving dirt from this spot, which had to be lowered 15 feet to desired grade.

"We didn't try for a record on the clearing operation," said Haile. "We just tried to keep the clearing ahead of excavating." From five to seven dozers alternating between clearing and dirt work, managed this very well.

Dirt moving in the open hearth area was a balanced operation. Five Caterpillar DW10's hauling CW10 scrapers started the ball rolling by topping the high spots and drifting dirt into the low areas, where the deepest fill was 41 feet.

When there was more working room, the Caterpillar scrapers were joined by a 16-yd. Bucyrus-Erie scraper and a 12-yd. LeTourneau Roadster, with electric control. Then started a train-loading operation that moved from 10,000 to 12,000 yards of clay per 8-hour day.

Greene explains the material loaded like this: "Well, the specifications called for mixing the top soil with the fill. This country has about 1½ feet to 3 feet of top soil with clay right under it. As the average crawler has about 18 inches to 24 inches of clearance, it gets high centered, and has rough going."

Mix Fill

Excavated material was mixed on the fill by hauling from alternate spots, and by using the following method: Scrapers working down to clay at a cut on one side of the area spread this material at the same time that other scrapers moved across the fill with top-soil. This dirt moving system was used throughout the entire job, and has produced acceptable fill.

Before the job is finished, Brown and Root excavators will have moved over 800,000 cubic yards of dirt. There has been a nice balance between cut and fill. Later there was some hunting around for borrow to backfill around the massive foundations of the several mills.

The above yardage includes site grading, roadways, access roads, both permanent and temporary, tracks and foundations for the buildings.

While excavating was proceeding in

the open hearth area, a crew was engaged in the removal for re-use of an estimated 6,640 lineal feet of existing Cyclone fence.

The area between the high ground in the northeast corner and the site of the rolling mills included a water-filled slough about 40 feet deep. It had to be filled to bring up the entire area, and almost all of the yardage from the hill-top was dumped there by the scrapers. However, as the foundation cut for the open hearth building was to be around 25 feet deep, part of this slough was left unfilled.

Water in the low areas had to be drained off. About 30 days after clearing and side grading operations had advanced far enough, the work of installing the specified underground sewer lines was carried right along with the site grading operation. As was expected, the sewers took care of the swamp water in the sloughs, making the use of pumps unnecessary.

The storm sewer and drainage systems were designed by A. B. Boynton engineers to drain the entire 220 acres east of State Highway 26-A to discharge points on Cypress Creek, below the spillway of Ellison Creek Reservoir, which has an elevation of 268.0. The system was designed to handle storm water at the rate of 4 inches of rainfall per hour with a 20% run-off through pipe ranging in size from 8 inches to 60 inches in diameter.

Excavate Sewer Trench

As one of the storm sewers in the open hearth area called for 60 in. pipe, it was necessary to dig a trench 15 feet below yard level, or 30 feet below original ground level. Here the contractor used a Northwest 6 dragline, a ¾-yd. Northwest 25 back-hoe, and an Insley T-12 dragline with ⅝-yd. bucket to excavate the necessary ditches. These machines were used throughout the job for this purpose. Most of the sewer excavating averaged about 10 feet below site grade. The bottoms of the widest ditches were compacted with a Tampo "wobble wheel" pneumatic tire roller drawn by an International Farmall tractor. Other ditches were compacted by hand labor using Chicago Pneumatic tampers and Barco-Pegson BR-5 gas operated rammers. The same tools compacted the clay in lifts around the pipe after it was laid.

With about 65 men on excavating, three 15-man crews on clearing, and 35 men in the storm sewer crew, the job began to shape up.

Excavating foreman Durwood Greene says this was the fastest job of earth moving in his experience, and he attributes this to first class equipment in good shape and a top notch gang of dirt pushers.

Within 30 days, all available excavating equipment was in operation. In the open hearth area it was a short haul. The tractors and scrapers moved the clay down hill to the fill area. Here it was spread in approximately 8-in. lifts by an assortment of International TD-24's, TD-14's, Caterpillar D8's, Caterpillar No. 12 and No. 112 main-

• At left, Jack Mundy, project manager for Brown & Root, Inc., confers with Hub Haile, general superintendent of grading, paving and equipment.

tainers. Usually one pusher worked every 3 scrapers in the train-loading operation.

The material was then compacted in approximately 6 passes to about 95% Procter density by Ingram and Grace double-drum sheepsfoot rollers, 2 to 4 in tandem, loaded to 650 psi. Whenever necessary, sprinklers kept the material wet. Rollers were drawn by International TD-18's and 24's.

Occasional rain water was pumped out of open storm sewers with Fairbanks Morse Pumps in sizes from 2 to 6 inches, and Gorman-Ruff 2 and 4 inch pumps, before the pipe could be laid and the ditches backfilled and compacted.

All excavating, grading, and underground work was completed in the open hearth section before earthmoving equipment was moved to other areas. The excavation for the stock yard and skullcracker foundation was finished and the storm sewers were in place when a tremendous pile driving program started.

Discover Pile Need

It was originally intended to build the foundations for the building and heavy machinery on spread footings. However, when undesirable sub-surface conditions were disclosed through Gow earth test borings, it was decided that a piling operation would be more successful under the heavy loads involved.

Pile driving started about the first of June in the stock yard, truck loading area. Step taper cast-in-place concrete piles were the type employed when this work was performed by the Raymond Concrete Pile Co. whose

• Excavation for scale-pit foundations above Raymond piles in foreground and More-trench wellpoint operation at center. Manitowoc Speedcrane lifts wellpoints.

contract was direct with the Lone Star Steel Co.

Two Raymond crawler pile-driving rigs on a 3-shift basis took on the task of planting 6,635 piles which, if laid end to end, would total almost 57 miles in length. With penetration averaging about 45-ft. below pile cut-off, the work progressed, for the most part, at a rate of 16 piles per rig per shift. Pay was on a lineal foot basis.

In Raymond's operation, a sheet-steel shell with a closed end is placed on the outside of a heavy steel driving core, or mandrel, and the shell and core are driven together into the ground. When satisfactory driving resistance has been attained, the core is withdrawn from the shell which is then inspected and filled with concrete. Slag aggregate concrete having a minimum 28 day strength of 3,000 psi was used for the piles and it was furnished, in transit-mix trucks, by the Gifford-Hill Co. of Dallas who established a batch plant on the job site to serve the entire project.

Shells used on this job varied in their dimensions depending on soil conditions and expected pile lengths. Tip diameters ranged from 8⅝ to 10⅜ inches and butt diameters from 13⅜ to 16⅛ inches. Step taper shell sections are normally 8-ft. in length, with the diameter increasing at the rate of one inch for each successive 8-ft. section. Reinforcing steel was used in the piles only when lateral forces, or uplift, were a design consideration. Design unit pile loadings averaged about 50 tons. When pile driving was completed in any one area, Brown and Root then got under way with the concrete substructure work from the pile-cut-off grade upward.

After the casings were driven, they were filled with Class A, 3,000 lb. concrete, mixed with portland cement, slag, and sand. It was furnished by Gifford-Hill in transit mix trucks which poured through a spout directly into the casings. Reinforcing steel was used in the piles only when necessary to tie in another section above ground level.

When pile driving had been completed, the concrete foundation work got underway.

A shop area had been established over in the southeast corner of the construction area, complete with repair shops, carpenter shop, warehouse, and all the other shops necessary to perform work and stock supplies for the Brown & Root contract.

Big Form Job

Here 98% of the 200,000 sq. ft. (contact area) of concrete forms were built by a gang of approximately 30 carpenters under the supervision of F. R. McFarland, concrete engineer. So far these forms have been handled about three times for a total of 600,000 sq. ft. of form placing. The forms are of standard construction built with 2 x 4-in. and 2 x 6-in. studs covered with 1 x 8-in. boards. Altogether about a million board feet of lumber, purchased from east Texas mills, has been used on the project.

After the forms were built, they were sprayed with form oil from regular orchard type spray guns and hauled to foundation areas by flat-bed and winch trucks, and lifted into place with the nearest available crane.

Then began the pour of approximately 90,000 cubic yards of concrete. Brown & Root purchased the concrete from Gifford-Hill of Dallas. A long time supplier of aggregate produced by crushing residue slag from the existing steel plant, Gifford-Hill had set up their crusher north of the existing steel plant.

The aggregate and cement for the 2,500 lb. concrete was hauled in transit-mix trucks to the rapidly expanding foundation forms, where it was transferred to 1 and 2-yd. bottom-dump Gar Bro concrete buckets.

A variety of cranes handled the buckets: A Marion 93 dragline swinging a 2-yd. bucket on a 90-ft. boom was powered by a Caterpillar D17000 Diesel. A Manitowoc 3000-B crane with a 70-ft. boom was powered with an International Diesel. Two Northwest 6 draglines, powered with Murphy Diesels, had 20-ft. extensions on their 55-ft. booms for extra reach in placing the concrete.

Concrete work followed standard procedure. When concrete was placed in the forms, Chicago Pneumatic vibrators powered by Chicago Pneumatic 105, 210, and 500 compressors and one Schramm 210 compressor took care of getting a compact pour.

While the concrete work was swinging along in good shape under the competent supervision of F. R. McFarland, concrete engineer, and Troy Johnson, assistant concrete superintendent, the earthmoving gang was making big strides in the vicinity of the skullcracker plant, and also spreading out toward the rolling mill site.

Road Work Begins

As soon as the compacting and grading was finished, some of the material was diverted to building the 8,650 lineal feet of roadways and parking areas, and the foundations for the 13 miles of standard gage railroad track.

There are two types of roads: 4,800 lineal feet of heavy duty for main plants, pipe shipping, and the scrap-preparation yard and 3,850 lineal feet of light duty roads for service and maintenance.

All roads will be macadam, water-bound with a bitumastic seal applied to the top course of screening. Also constructed in addition to the above will be two parking areas within the plant site. The first will be adjacent

• Scrapers and bulldozers build haul road across gulley with brush area on both sides of road set for dozing and compaction.

to the open-hearth building where there will be approximately 4,000 sq. ft. of slag-covered parking space for 20 vehicles. Another parking area the same size is being graded near the rolling and pipe mill area. The present parking area, located along the main entrance road outside the existing plant is to be increased by 100,000 sq. ft.

Naturally, the contractor haul roads were constructed as soon as enough area had been cleared, leveled and compacted. As far as possible these followed the route set up for permanent plant roads, in order to make the operation as economical as possible.

Clay from the excavated areas was placed by the scrapers, compacted by the rollers in 6-in. lifts, and then topped off with about 8-in. of the iron-ore gravel (a red gravelly soil, high in iron content). This iron-ore gravel was hauled by dump trucks from the deposit about 7 miles away.

In order to build the 24-ft. wide permanent roads, clay from adjacent cuts was placed in a line between stakes by scrapers and dump trucks. Then the Model 12 maintainers spread the clay in approximately 6-in. lifts, feathering out on a 1:4 slope toward the edge. Shoulders will be built along the edges of all roads, by dumping and compacting minus 4-in. slag.

The total depth of the heavy duty roads will be 16 inches at the edge; made up of a base course 8-in. thick, covered with a 1-in. layer of screenings or crushed slag forced into fill interstices, water bound and rolled with sheepsfoot pneumatic rollers. The 4-in. of base material will be spread and rolled and covered with 3 inches of top-course, sealed with a penetrating bitumastic sealer. The base material will be crushed slag plus 1-in. to minus 4-in. screening, and top courses are to be minus ½-in. slag.

● Above: Here initial clearing has been completed for site of scrap preparation and stock yard area. Labor gang is burning brush. Scrapers at far right are hauling clay, while scrapers at lower right and center cross at right angles while dumping topsoil on mixing operation for fill. Right: Raymond pile driver rig sinks step-taper piles in open hearth area.

Light duty or service roads will be 11 inches at the edge, made up of 8-in. base course and 3-in. top course, water bound and sealed with bitumastic sealer.

Estimated materials required for the roads and parking areas are:

168,500 yds. plus 1-in. to minus 4-in. slag.

66,500 yds. minus 1-in. slag screening.

12,50[illegible] gallons of penetrating bitumastic sealer.

1,675 sq. yds. of wood plank crossovers.

Although, the entire road system has been laid out at the time of writing much of the work remaining will not be finished until the end of construction approaches.

By July 1, 1951, lost time caused by several heavy rains had been made up, enabling dirtmoving to be concluded about Sept. 1, 1951. Pile driving operations in the boiler house, scrap preparation yard, and skull-cracker areas had been finished and all of the pile driving units had been moved into the open-hearth area.

Expect Worker Influx

Brown & Root employees on construction work alone numbered 600 at this time. This was the highest number to date, but is only about one third of the number of men expected to be working for prime and sub-contractors when the construction of buildings and installation of machines and other equipment reaches peak.

Another job of excavating was the removal and filling in of the original spent-acid disposal pond and the construction of the new spent-acid disposal pond which is now located southwest of the open hearth area. This was handled by scrapers, bulldozers, and maintainers.

About Aug. 13, 1951, W. A. Smith, Houston Railroad builders under a sub-contract from Brown & Root, commenced construction of 13 miles of standard gage railroad track to be contained within the plant area. This job will require the use of 20,000 yds. of ballast slag, 2,200 tons of 100-lb. rail. Most track is being laid on level grade, but there is some elevated track climbing to a maximum grade of .07. The track building operation is now

• Backfill is hand tamped around Raymond step-taper piles in scale pit foundation area. Air is being furnished here by Chicago pneumatic 210 compressor. Below: Limonite iron ore is loaded by Bucyrus-Erie 54-B dragline into Euclid end-dump.

• Above right: Nearly completed foundations in rolling mill area trap water after deluge in Lone Star, Tex. area.

about 80% complete. It is under the supervision of J. A. Johnson, foreman for W. A. Smith, Inc.

At present, the concrete crews are installing foundations at the rolling mill area. Each foundation for heavy equipment has different specifications for strength of bearing load. The concrete is reinforced with bars ranging from ⅜-in. to 1⅜-in. The total is 5,000 tons. Foundations are now about 50% complete. However, there is a large amount of concrete paving to be done in the furnace and mill buildings.

Under the stacks for the furnaces in the open-hearth mill, workers are placing 19½-ft. deep reinforced concrete. And now the bulk of the foundation work is concentrated in the rolling mill area where a veritable forest of crane booms locates the spot. With 235 men in the form building and concrete department as of Feb. 5, 1951, this part of the operation is going along in good shape.

Drive Sheet Piles

In excavating several foundations for the scale pits in the pipe mill location, it was found that water-bearing sand would necessitate some sheet steel piling for cofferdams. The sheet steel piles were driven in 25-ft. lengths by McKiernan-Terry double-acting No. 7 hammer handled by the 90-ft. boom on a Marion 93 crane.

As the water table here is reached at 18 feet, a Moretrench wellpoint system was put into operation under the supervision of B. A. Bungum, foreman for the Moretrench Co. Fifty-five points were put down around one foundation in the rolling mill through 20 feet of clay and water bearing sand. As the contractor did not want hole punchers used, a high-pressure water line was used to ream out for the wellpoints.

Moretrench self-priming 8-in. pumps were hooked up with the wellpoints through an 8-in. manifold. Surface water will be removed through a 10-in. drainage line connected to a manhole in the sewer system about 15 feet above and to the rear of the excavation. The centrifugal pump on the Moretrench equipment is made by Fairbanks Morse and the vacuum pump is made by Moretrench at their plant in New Jersey.

The Moretrench equipment obtained from this firm's Houston plant has been rented by Brown & Root. The labor gang was furnished by Brown & Root, but the operation and equipment is being supervised by the Moretrench foreman. A pneumatic-tired Speedcrane dragline, model 307 with a 50-ft. boom in 3 sections was being used to hoist the wellpoints attached to the high pressure water line. The points were being driven at the rate of about 2 per hour. Bungum figured it would take 48 hours to pump the water from this cofferdam after the wellpoints are installed.

Excavating within the cofferdams is handled by the Speedcrane and a ¾-yd. clamshell bucket.

Where the foundations had already

• Stanley Ibenthal, assistant project manager; Troy Johnson, concrete superintendent; and L. J. Kirk, masonry foreman, are shown in conference (left to right) near foundations for new pipe plant.

received their coating of bitumastic waterproof coating, a Northwest Model 6 with a ¾-yd. bucket was doing some backfilling where it had to be placed carefully. Fill was tamped with Barco gas-operated tampers and C. P. & Thor tampers with air furnished by Chicago Pneumatic and Ingersoll-Rand compressors.

However the bulk of the back-filling here was being done with a 4 and 5-yd. rear-dump trucks backing up to the edge of the foundation. In places where the dumps could not approach too close, they dumped on the edge of the foundation, and then the dirt was dozed into the excavation by an International TD-18 and Bucyrus-Erie blade. Helping out with this work was an 8-yd. LeTourneau scraper drawn by an International TD-24. This team picked up dirt from the area between the pipe mill location and the open hearth plant and dumped adjacent to the area between foundation and haul road. Here the dozer pushed the material into the fill.

One reason for speedy dirtmoving on this job is the excellent maintenance and repair facilities under the supervision of W. L. Griffin, foreman of the repair shops. With 15 men in his crew, and a large assortment of tools including a lathe, power saw, bolt threading machine, and power drills, Griffin has managed to "keep 'em rolling" with a minimum of lost time.

A contractor-built, Alemite-fitted grease rig, using Humble products, patrols the entire construction area. Lincoln 200 and 300 amp. welders are used in repairing broken parts.

There is no labor camp on the job. Workmen live in the towns of Longview, Gilmer, and Lone Star.

In the Brown & Root field office Jack Mundy, project manager, and Stanley Ibenthal, assistant project manager, assisted by a force of administrative personnel, plan and conduct the big undertaking. Included here is an assembly room where a meeting of department heads takes place each day.

One of the most important departments is the purchasing set-up headed by Earl Crawford, who is assisted by expediters all over the nation in obtaining the materials and equipment purchased by Brown & Root for the Lone Star Steel Co. One of the problems ahead is the mass arrival of the steel-making equipment and machinery in a short space of time, estimated to be early in the fall of 1952. It is necessary to start scheduling the right personnel to handle this major installation job.

Host of Extra Jobs

The installation of much of the equipment to be installed will be handled by the 125-ton and 275-ton overhead cranes. These are to be erected by Brown & Root, after structural steel buildings have been erected in the open hearth and rolling mill plants.

Structural steel for all the main buildings is being erected by the American Bridge Co. and the Mosher Steel Co. These firms are using their own crews and equipment.

There seems to be no end to the amount of work remaining to be done such as the installation of facilities for natural gas, steam, service water, drinking water, and sanitary services.

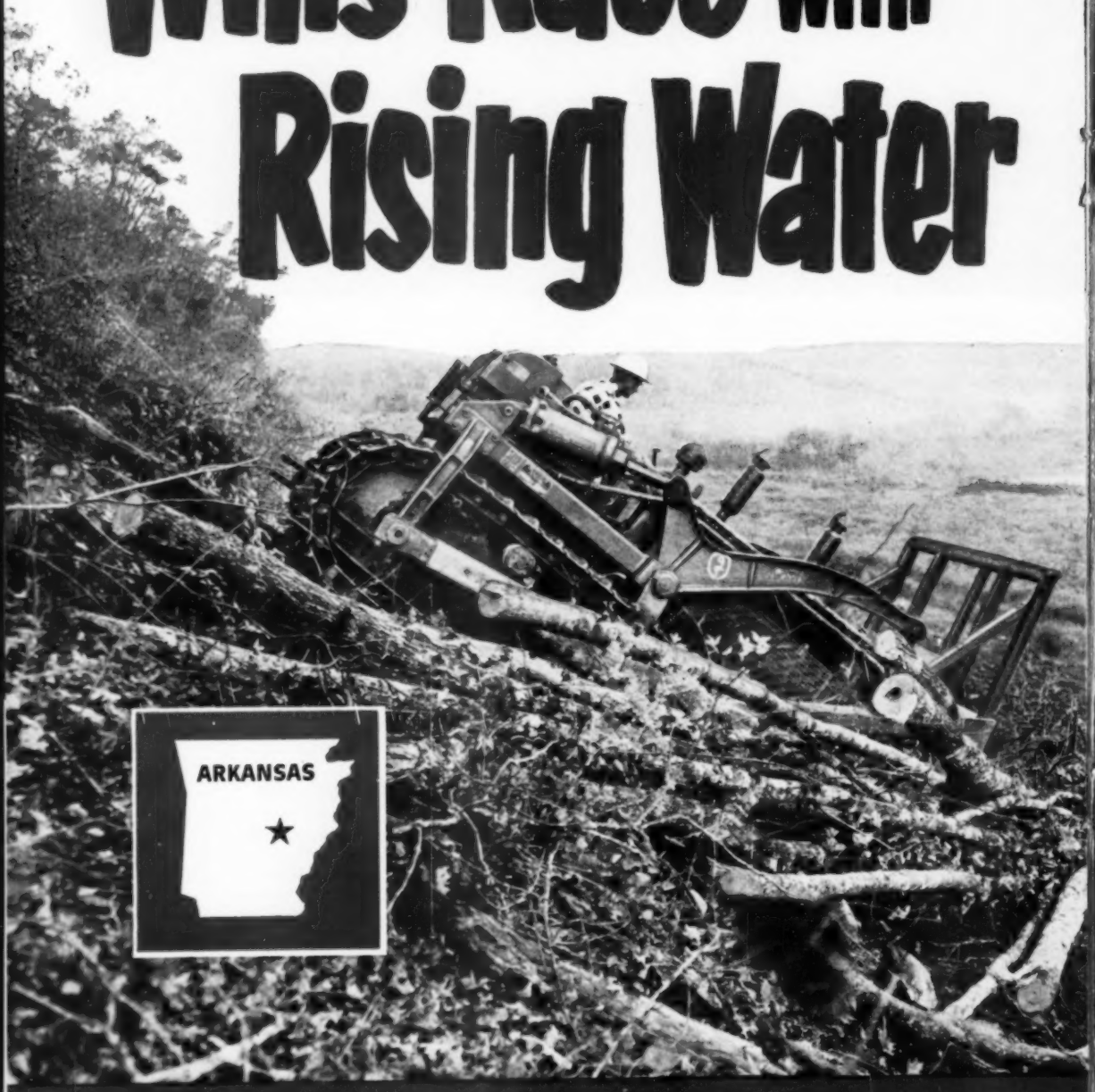
Another job for Brown & Root is the excavating of the site, and the building of a water filtration plant, on the opposite side of highway 26 about ½ mile away. When completed this plant will tie into the existing 4 million gallon water reservoir.

On that spot now, a Northwest 6 dragline is removing dirt for the foundation, and an International TD-24 with Bucyrus-Erie bulldozer blade and a Caterpillar 12 maintainer are bucking grade.

In addition to the regular production buildings there remains the building of gate houses, fencing, open hearth office, rolling mill office, pipe mill and shipping office, administration building, laboratories, and engineering office. Each will require excavating, and foundation work as outlined previously.

Although completion of the entire project is scheduled for early in the first quarter of 1953, the engineers say that "ingot in '52" will be a reality. Anybody now visiting the site will agree to that statement if he had been there a year earlier when the entire area was a dense stand of east Texas forest.

Wins Race with Rising Water



Team of IH crawlers clears reservoir in the mountains while White River backs up behind Bull Shoals Dam

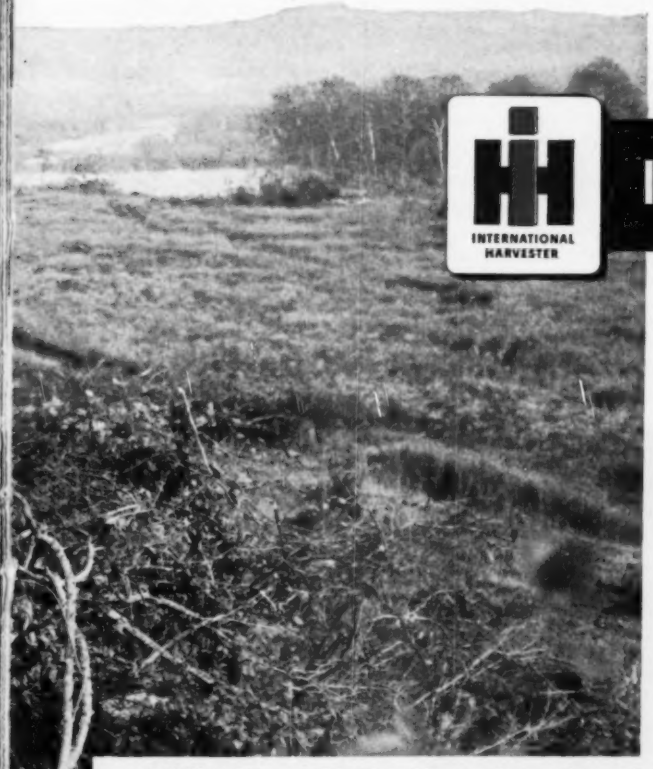
The minute they closed the new Bull Shoals Dam on Arkansas' White River, water started backing up over ground still covered with trees and brush. It had to be cleared and cleared fast, and one of the crews on the big job was Patton Construction Co.

Patton tackled the steep, overgrown slopes with 150 men and six International crawlers ranging from TD-18A's down to a TD-9. Each crawler averaged 10 acres cleared a day—*"remarkable, in this rough Ozark Mountain country,"* says Tractor Foreman Hallie Goldsmitt.

And operator W. W. Sloane, adds, *"We go up these mountainsides forwards, backwards or sideways—but we go up somehow and we get the job done because these Internationals have the power."*

Ask your International Industrial Distributor today for details on the whole International line of rugged red crawlers. Ask about his service, too—and his complete stock of spare parts for any emergency. Get all the answers—and put International "Power that Pays" to work for you!

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS



DOWN the hill goes a TD-18A, and down go the trees that stand in its way. International crawlers have what it takes, both in sheer dogged power and rugged reliability.

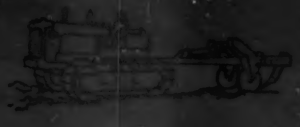
SEE YOU AT THE POLLS!

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

UP comes another TD-18A, hitting fast and hard on a job where speed counts in beating the rising waters backing up behind the dam to create a new reservoir.



Dozers Crumble Valentino Mansion

ANOTHER section of the Hollywood Freeway will give the nation's film capital an even more modern look. This latest landmark of progress for the Los Angeles area calls for 380,000 yards of excavation.

Scores of homes were wrecked in order to make way for the route. Perhaps the most famous home demolished was that formerly occupied by the late Rudolph Valentino, idol of millions of movie fans before his death in 1926. International TD-24 crawlers equipped with Bucyrus-Erie dozers made short work of the structure. The machines belong to J. Tomei & Sons. Tomei has the earthmoving and grading work on a sub-contract from Carlo Bongiovanni, low bidder for the section. Already the swimming pool, fountains, tile and brick walls of "Villa Valentino" are again getting heavy use; this time as fill for the new route.

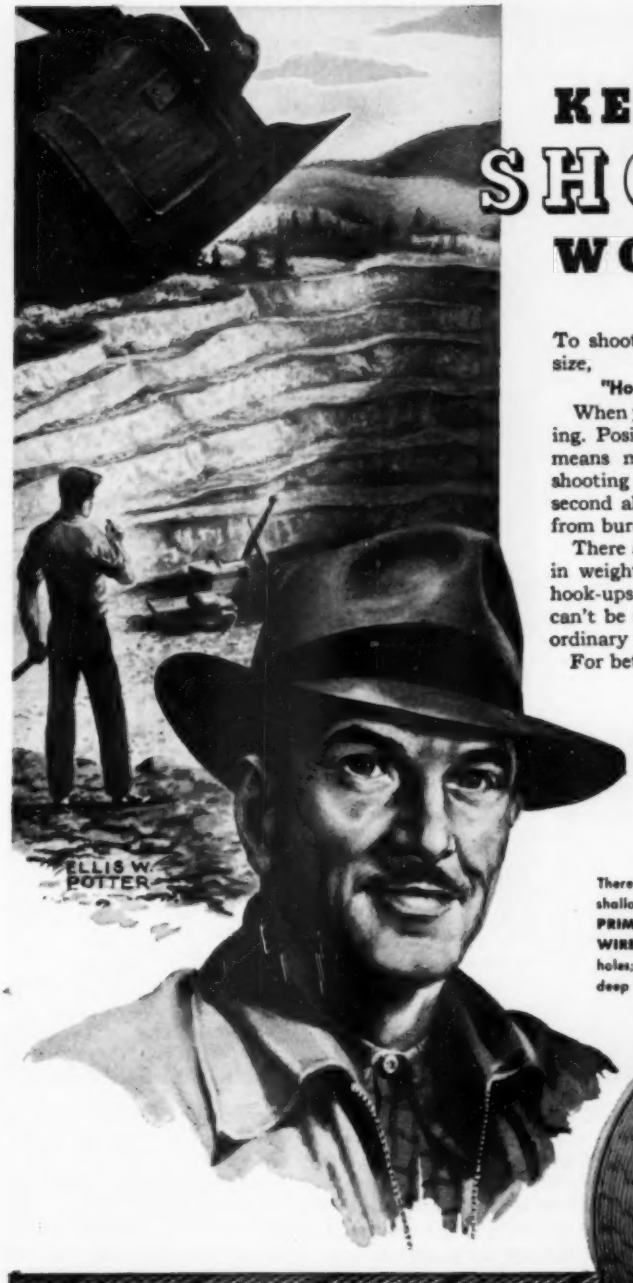
The section now under construction is 1.4 miles long and costs about $2.5 million. It was started the 26th of February and is due to be completed on Jan. 25, 1954, according to Resident Engineer Milton Masters.

The freeway, which will afford much faster and more convenient access to the Hollywood Bowl than at present, will be replete with on and off ramps, overpasses, and underpasses. About 14,850 yds. of structural concrete are involved in the project.

The present work on the six-lane divided Hollywood Freeway pushes the route closer to the San Fernando Valley. The freeway, which originates at the Los Angeles civic center, will eventually extend across the San Fernando Valley. The Hollywood Freeway is part of a 10-year program of freeways radiating from the center of Los Angeles.

• Two International TD-24's with Bucyrus-Erie cable dozers level incline for new Hollywood freeway. To rear of machines lie ruins of first mansion built by late film idol, Rudolph Valentino.

• Below: Contractor Julio Tomei and Resident Engineer Milton Masters plan next phase of demolition. They stand next to pool once crowned with life-sized statue of Rudolph. Right: General view of shattered remains of "Villa Valentino."



KEEPS SHOVELS WORKING

To shoot that heavy overburden down to handling size,

"Hook Up and Detonate with PRIMACORD"

When you use Primacord you get faster, easier loading. Positive firing of every cartridge in every hole means more work from your explosives. Planned shooting detonates the front holes a fraction of a second ahead of those behind, thus giving you relief from burden and better fragmentation.

There are other advantages, too. Primacord is light in weight — saving you time in making trunk line hook-ups and down-the-hole branches. And it's safe — can't be set off by stray currents, friction, sparks or ordinary shocks.

For better digging, use PRIMACORD regularly.

Ask your explosives supplier or write us direct for further facts

THE ENSIGN-BICKFORD COMPANY
SIMSBURY, CONNECTICUT
Also Safety Fuse since 1836

There's a type for every job. **PLAIN PRIMACORD** for shallow holes and surface trunk lines; **REINFORCED PRIMACORD** for deep holes and resistance to abrasion; **WIRE COUNTERED PRIMACORD** for deep, ragged holes; and **PLASTIC REINFORCED PRIMACORD** for deep holes and unusual wet conditions.

Use PRIMACORD®

The PROVED and APPROVED DETONATING FUSE

City Plans Step-By-Step Sewer Program

by Albert S. Keshen

Stamford, Conn. engineers stick to clay pipe in extending sanitary sewer system. $680,000 contract aids growth of 75,000 population community.

● Here are two views of sewer operations around Stamford's Atlantic Square. Paul Bacco & Son., Inc. have $680,000 contract for this section which calls for $115,000 worth of clay pipe shown in pictures.

CITY engineers of Stamford, Conn., have charted a step-by-step extension of the sanitary sewer system to reach areas which do not have this service and to relieve the overloading on existing sewer lines. This suburban community of 75,000 located 33 miles from New York City is an important industrial and business center as well as a residential community. Its steady growth is being scientifically planned by the civic authorities.

Latest step in this direction is passage of a bond issue of several millions to provide for sewer facilities. This project began at Canal and State streets and ran up through Atlantic Square which is the principal business center. At the same time work began on another section in the north end where a 36-in. line is being run up Washington Ave. to Woodside St. and then a 24-in. line to Summer St.

The contract for laying down clay pipe in the Atlantic Square section and the North End section went to Paul Bacco & Son, Inc., general contractors of Stamford. They obtained the $680,000 general contract which calls for, among other items, laying down $115,000 worth of clay pipe for a total length of 6,180 feet. All of this clay pipe is in extra strength, in lots as follows: 700 feet of 18-in., 580 feet of 24-in. and 4,900 ft. of 36-in.

A crew of 44 men was employed on the two sections by Bacco.

High Water Problem

Greatest problem encountered was that of excessive high water. When the project was initiated at the lower end of the city adjacent to Long Island Sound, workmen had to dig between tides and were forced to lay off when high tide set in. Sheathing put in place was 2x8 fir planks 17 feet long and 8x8 whalers. It was decided to leave this sheathing in place after the pipe was laid and the ground covered over.

Bacco's workmen encountered the same conditions although to a lesser extent when operating in the North End section due to excessive water coming in from the adjacent river. At Washington Ave. they were operating 2.5 feet below the river bed which necessitated extensive wellpointing.

Another problem arose when they had to carefully dig between two already existing pipe lines, with sanitary sewer pipes on one side and an 8 in. water main on the other side. When these lines converged they had to narrow the ditch and so instead of a wellpoint operation they used as many as six pumps draining from 2 to 4 feet of water.

In this area corrugated steel sheeting was used and digging went down to 12 and 15-ft. depths. Sheeting was air-hammered down with tools powered by an Ingersoll-Rand compressor, Model 105, air-cooled. Water was pumped out by an Ingersoll-Rand Mobil-Air Model KA-105 two-stage air-

cooled compressor back of a Mack truck and use of a Marlow pump of 4-in. centrifugal on a 15-ft. trailer.

Delicate Shoring Operation

In the Atlantic Street business section the problem was that of putting in tight shoring, a delicate operation because the trench was next to the adjacent main sanitary sewer line. This older sanitary sewer now in use was built some 50 years ago with 10-in. and 15-in. clay pipe. Now a larger 36-in. clay pipe is used.

Bacco's workmen went down below the existing pipe line, using wood board sheathing and planks. Trench depths were 13 feet with 5 to 6-ft. widths.

Occasional delay would result when one of the lateral clay pipes from the business houses to the existing sanitary sewer line would be cut by the excavator. This necessitated replacing the damaged pipe and encasing in concrete.

Excavating, pipe handling, and compacting machinery used included: two Bucyrus-Erie 22-B excavators (clamshell and dragshovel), two Bucyrus-Erie 38-B cranes, International TD-9 crawler with Bucyrus-Erie Dozershovel, Huber 3T-485 roller, Trojan loader and one shovel dozer.

The project was supervised by City Engineer Leon Tuttle.

NEW TILTING TRAILER
for 5th wheel tractors!

Easily
loaded and unloaded
in 5 min. by 1 man!

Here at last is a *practical* heavy-duty tilting trailer, embodying the famed La Crosse *"double-strength"* gooseneck, for hauling big trenchers, shovels and other equipment behind standard 5th wheel tractors. Eliminates need for skids and blocking . . . saves hours of labor on every move. Operator simply tilts trailer platform to ramp position . . . drives or winches equipment into place . . . and he's ready to go in 5 minutes, with *platform automatically leveled and locked for traveling.*

Available in 14, 18 and 22 ton capacities, this new GTTA Tilt Top gives you all the advantages of job-proved La Crosse construction, including: "uni-built" subframe, hydraulic cushioned platform control, "walking beam" axle supports, big constant rise S cam brakes, and extra wide base rims for longer tire life. Write today for complete details, including facts on La Crosse *draw-bar-type* tilt trailers, and custom-built La Crosse low beds up to 67 tons capacity.

LC-24

Check Today! LA CROSSE TRAILER CORPORATION, La Crosse, Wis.

Rush complete information on La Crosse trailers:
☐ Gooseneck Tilt ☐ Draw-bar Tilt ☐ Standard Low Bed
☐ Send name of nearest La Crosse Distributor.
☐ We may buy a ..... ton trailer about ..... (date)
Name..... Title.....
Employed by..... .....
Address.....
City..... State.....

LaCROSSE
America's Favorite LOW BED TRAILER

"CONSOLIDATION COAL"

...with 2 rubber-tired Tournadozers

Consolidation Coal Company, (Ky.), a division of Pittsburgh Consolidation Coal Company, operates 4 mines and 2 preparation plants within a 20-mile radius of their offices at Jenkins, Kentucky. One of their 2 rubber-tired C Tournadozers handles all clean-up work at their "Beefhide" spread . . . the second "C" is on standby duty to handle emergency jobs at *all four* mines and the Jenkins Preparation Plant. This rubber-tired unit drives to the scattered job locations under its own power . . . travels over paved highways, limestone and red-dog surfaced mine roads, across tracks, up and down 20% grades at speeds up to 19 m.p.h. It is ready to go *anywhere* at a moment's notice. No blocking, loading or unloading delays at any time! With high speeds on rubber, it puts spare time to work . . . drains refuse areas . . . strips overburden . . . hauls equipment on low-bed trailers . . . handles many other odd jobs.

Saves 1" to 2" of coal on clean-up work

On clean-up assignments, Tournadozer's low-pressure tires reduce coal waste . . . don't dig coal into the ground or grind it into unrecoverable fines. At the "Beefhide" mine, for example, Consolidation's Tournadozer saves an estimated 1" to 2" of coal on its continuous cleaning operation.

Mobile Tournadozer gives "Consolidation" important *mechanical* advantages, too! 186 h.p. engine and 4-wheel drive put plenty of power behind the rugged 2½-yard blade. Instant-shift selection of 4 forward speeds saves vital momentum . . . lets operator drift loads in higher gears. Reverse speeds to 8 m.p.h. cut non-productive time on return half of cycle for more passes per hour. Big 21.00 x 25 low-pressure tires give plenty of sure-footed traction in soft material. Powerful 4-wheel, disc-type air brakes assure fast, safe control at all times.

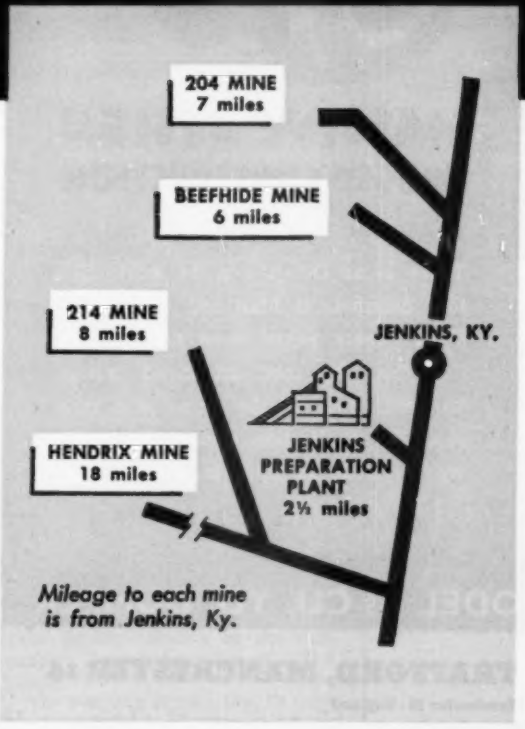
Your LeTourneau Distributor will be glad to show you the Tournadozer in action, so you can judge these advantages for yourself. Call him next time you're considering dozers.

Tournadozer—Trademark Reg. U. S. Pat. Off. D-32-CM

R. G. LeTOURNEAU, INC.
Peoria, Illinois

HIGH-SPEED, RUBBER-TIRED EXCAVATING ●

SERVICES 4 MINES...



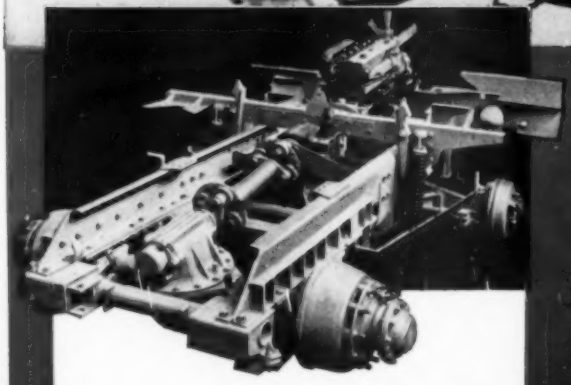
At the Hendrix mine slate dump, Tournadozer pushes its load of truck-dumped slate 75' in 2nd gear (3.7 m.p.h.) . . . returns to dumping point in high reverse (8 m.p.h.).

Tournadozer works on loose spoil banks or hard-packed coal seams without damaging coal surface . . . completes dozing cycles in ½ to ⅓ the time required by crawler-tractors.

HAULING • LIFTING EQUIPMENT

LETOURNEAU EQUIPMENT

Strength with FLEXIBILITY



MASSIVE DESIGN
RUGGED CONSTRUCTION

EQUALLY AT HOME ON ROAD OR SITE

There is no Dumper in the world like this British-built Muir-Hill 4½ yarder. Over twenty years know how is built into this—the most advanced unit in its field. Just off the press is a new Muir-Hill publication giving the whole story. Write us today for a free copy.

MADE IN ENGLAND

ENGINEERED for DURABILITY

This is a chassis built to stand up to the worst conditions which construction work can offer and will save dollars on maintenance and repl[illegible] gravity tip act[illegible]

The Muir-Hill B MODEL 4½ CU. YD. DUMPER

E. BOYDELL & CO. LTD., OLD TRAFFORD, MANCHESTER 16

Cables: 'Muirhill' Manchester 16, England

THE WORLD'S BIGGEST DUMPER BUILDERS

dm EB 194

News from the Field

Safety Congress to Meet

The 40th National Safety Congress and Exposition is to be held on the 20-24 of October in Chicago, Ill. Sessions on industrial safety are scheduled for the Conrad Hilton, Congress, Morrison and Sheraton hotels. Further information is available from R. L. Forney, general secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Portland Cement Group Promotes A. A. Anderson

A. A. Anderson, former manager of the Highways and Municipal Bureau of the Portland Cement Association and nationally known technician in the concrete paving field, has been appointed chief highway consultant of the PCA, with headquarters at the association's general office, 33 W. Grand Ave., Chicago, Ill. He is succeeded by L. M. Arms, former assistant manager of the Highways Bureau, according to an announcement by C. D. Franks, executive vice president of the association.

Colorado Association Moves

The Colorado Contractors Association, Inc. has left the offices located at 302 Flat Iron Building in Denver. The new address of the group is Suite 169-170, Shirley Savoy Hotel, Broadway at Seventeenth, Denver 2, Colo.

Award Army Trailer Order to Pressed Steel Car Co.

Pressed Steel Car Co., Inc., has received an order totaling almost $9 million from the Ordnance Tank-Automotive Center, Detroit, Mich., for a sizable quantity of heavy duty, low-bed trailers and dollies.

The order, comprised of twenty-five-ton low-bed semi-trailers, twenty-ton low-bed semi-trailers with dollies, tandem axle dollies and twelve-ton low-bed semi-trailers with dollies, is said to be the largest order of its kind for this type of equipment.

The trailers and dollies called for in the Ordnance Corps, order will be manufactured by Pressed Steel Car's Jahn Trailer Division at the company's Hegewisch (Chicago, Ill.), plant.

The company stresses that its regular commercial production of trailers will not be disturbed by the Ordnance

STURDILITE

The HEAVY-DUTY FLOOD LAMP THAT

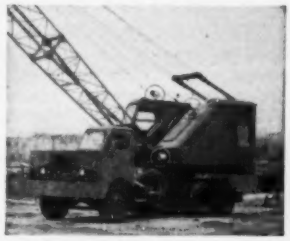
Lights Your Work Better . . . Gives Longer Service at Lower Cost

Vibration-absorbing Base

Specially Designed for Efficient Service on
Shovels — Excavators — Drag-lines
Roadbuilding Equipment
Locomotive Cranes — Tractors

"BUILT to take it," say users of STURDILITE Heavy-Duty Flood Lamps, after years of trouble-free service. Hermetically sealed-beam lamp—no reflector to become tarnished. Complete assembly mounted on rubber cushioned base that absorbs vibration and shocks. Available in 6-8, 12-16, 24-28 and 110-120 voltages.

COMPLETE BULLETIN, specifications, and quantity prices sent promptly upon request.



Metal Spinning Division
PHOENIX PRODUCTS COMPANY
4723 N. 27TH STREET, MILWAUKEE 16, WISCONSIN

CUT EXPORT SHIPPING LOSSES

Save a vast amount of work and protect yourself against long delays and heavy losses by letting us handle the clearance of your export shipments from American ports.

Throughout the world, regulations for the exporting and importing of goods are becoming increasingly stringent and complex. Shippers and consignees have been losing thousands of dollars through their lack of knowledge of these regulations and their unfamiliarity with the maze of documents required to conform to them.

By acting as your shipping agents, we can supply the necessary knowledge and handle the required documents for you. It is our business to keep completely informed on all the latest regulations imposed by both the U. S. and foreign governments and to be thoroughly familiar with banking practices and import exchange requirements in every country in the world.

We've had 95 years of experience and know, therefore, how to get your foreign shipments to their destinations without trouble and on time. Write us today for complete details on all of our many export shipping services.

CALDWELL & COMPANY, INC.
Shipping Agents for Nearly a Century. Est. 1857
50 Broad Street, New York 4, N. Y.
Cable Address: BENCALD, New York

Federal Maritime Board Registration No. 87

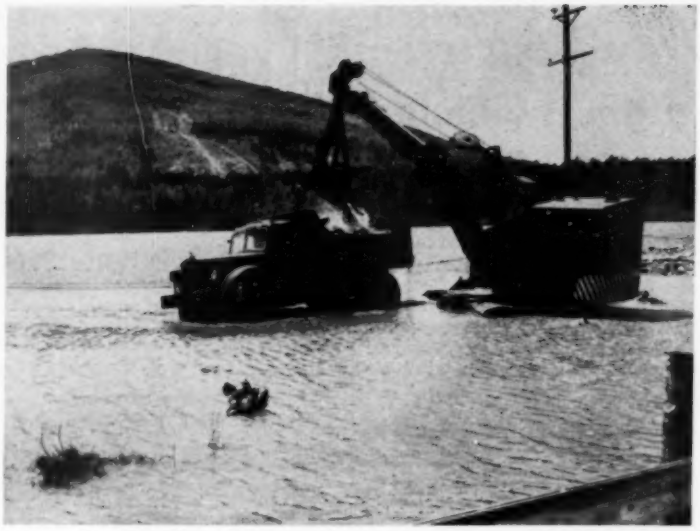
order, since plant and equipment separate from that engaged in commercial production will be utilized. Development work on new commercial trailers will continue and new models will be added to the present line, the company said.

Revised Handbook Ready for Uranium Prospectors

A revised edition of the popular pocket-sized handbook for uranium prospectors, *Prospecting for Uranium*, is available from the Superintendent of Documents, U. S. Government Printing Office. The booklet is jointly published by the U. S. Atomic Energy Commission and the U. S. Geological Survey. The price is 45c per copy.

For the first time there are shown, in the revised edition, eight color reproductions of common uranium bearing ores. The color photography was the work of Brookhaven National Laboratory. The new revision also includes latest official AEC price circulars, including Domestic Uranium Program Circular 6 providing for the bonus for initial production of uranium ores from domestic mines, and a compilation of public land orders listing tracts withdrawn from public use.

Information in this booklet is designed to answer all the common inquiries received by government agencies as the result of the AEC's continuing program for domestic uranium production. Approximately 77,000 copies of the first edition were sold. Orders for the revised edition are being accepted by the Government Printing Office. There is a 25% discount available on lots of more than 100.



• This Northwest back hoe excavates a rockfill for bridge to be built on highway reconstruction job between Bridgton and Fryeburg, Me. A Caterpillar Diesel D318 engine powers machine loading Mack truck.

Full power behind both drills with Jaeger air-plus pressure

75 ft. 125 ft. 185 ft. 250 ft. 365 ft. 600 ft.

By using a "new standard" Jaeger 365 compressor instead of a 315 on this by-pass bridge approach at Shelton, Connecticut, Mariani Construction Co. was able to hold a 4" wagon drill at top efficiency, averaging 300' per day in shale, *and operate a hand-held drill at the same time.* All Jaeger sizes offer like advantages—more air per dollar, more production per hour.

THE JAEGER MACHINE COMPANY 553 Dublin Avenue Columbus 16, Ohio

PUMPS • MIXERS • TRUCK MIXERS • PAVING SPREADERS and FINISHERS

Equipment Association Moves Offices

The Associated Equipment Distributors have recently changed their office location in favor of larger quarters. They now occupy space at 30 E. Cedar St., Chicago 11, Ill. The new offices house Construction Equipment News and the A.E.D. group insurance trust fund in addition to A.E.D. executives.

12 Months' Steel Output Tops 19th Century Total

In a single year now, producing at full capacity, the steelmaking furnaces in the United States can turn out as much steel as was made in this country from Colonial days to about 1900, the American Iron and Steel Institute reported.

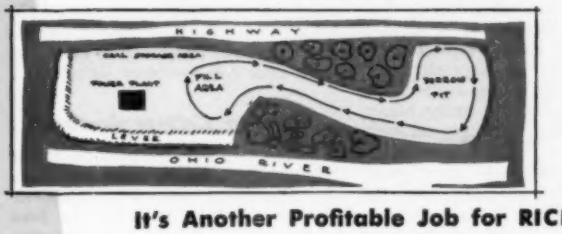
The furnaces now have the capacity to make almost 108.6 million tons of ingots and steel for castings annually. The capacity was increased more than 4.3 million tons during 1951.

The amount of capacity for each person in the continental United States is now about 1,400 pounds, compared with 807 pounds in 1939.

The 4.3 million ton rise in the capacity during 1951 could provide finished steel for all the following items: one million passenger autos; 800,000

DRY FEET
FOR CINCINNATI POWER PLANT

3 LPC MOTOR SCRAPERS
BUILD 1,500,000-YD. LEVEE TO PROTECT IT FROM THE OHIO RIVER



Here's a power plant that will keep dry and operating come Hell or high water, now that it's protected from Ohio River floods. Richter Transfer Co., of Cincinnati, is using three TS 300 Motor Scrapers to build a levee around the Cincinnati Gas & Electric Company's power house at New Richmond, Ohio, right on the river's bank. They are also leveling for a coal storage area adjacent to the power plant. It's a tough operation that calls for the best in earthmoving equipment.

On this job, Richter Transfer Co. is moving approximately 1,500,000-yds. of heavy, wet clay with their three TS 300s. Each Motor Scraper is hauling 50 loads a day on a 6000-ft. cycle, and getting a 15-yd. pay load every trip. Ejection of the sticky clay is no problem with the Motor Scraper's positive forced ejection *plus* the extra high apron lift. There's no chance for material to jam between the ejector and the apron. Extra power and big tires move the rigs through the heavy fill area without bogging down.

It's Another Profitable Job for RICHTER TRANSFER CO., Cincinnati, Ohio

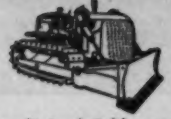
It's no wonder more and more profit-conscious outfits like Richter Transfer Co. are using TS 300 Motor Scrapers for their toughest jobs, because when a rig handles the tough ones easily, it's a profit-producer for every earthmoving job. With TS 300s you get really big capacity . . . 14-cu. yds. struck and 18-cu. yds. heaped. That means greater pay loads each trip. Speeds in excess of 22 miles per hour mean more trips per hour. Easy loading characteristics and positive forced ejection, plus an 8' 9" front apron opening, cut valuable seconds off the operating cycle. Big power . . . with your choice of two diesel engines, a 280 HP Buda or a 275 HP Cummins, gives you power to spare in the pit or in the fill, and insures top working speeds at all times.

Whether your job calls for one unit or a dozen, it will pay you to check all the profit-making features of TS 300 Motor Scrapers. See your LaPlant-Choate distributor today.

LaPLANT-CHOATE
MANUFACTURING CO., INC. ® CEDAR RAPIDS, IOWA, U. S. A.

Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors.

2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.



Hydraulic and Cable-operated Dozers.

household refrigerators; 800,000 domestic cooking stoves, 10,000 freight cars; one million television sets; one aircraft carrier; two heavy cruisers; one-half million three-inch shells; 500 army tanks; 10,000 airplanes; 3,000 six-room houses; leaving about 65,000 tons of finished steel for other uses.

Term Giant Tire 'World's Largest'

So tall you could not get it through your garage door . . . so wide that it could not go through the door of your house. That's the giant of all tires—10 feet tall and 4 feet wide.

It's called the special "48 x 68" built for R. G. LeTourneau for experimental use on a "swamp buggy" now undergoing development by the company at its plant at Longview, Tex. To give it a test run even before its installation on the machine for which it was built, the company mounted a pair of these giants on the front wheels of a 35-ton capacity Tournapull earthmover.

This new tire, manufactured by Firestone Tire & Rubber Co. at Akron, O., is tubeless. It is designed to operate at air pressure from 10 to 15 pounds (depending upon deflection). This is less than half the air pressure normally used in a passenger car tire, and from a third to a half the air pressure used in earthmoving equipment tires, depending on size of machine.

In developing tires specifically for earthmover use, it was discovered that decreasing air pressure improved performance. Next, it was found that flotation is essential—the ability of a tire to carry loads with minimum penetration into ground surface. The next step was the development of a tire with a large cross section for flotation, the ability to carry heavy loads, greater rim diameter, and anchored bead.

To accommodate this latest giant tire, which is made to requirements he specified, LeTourneau developed the improved, low flange, wedge-type wheel which permits the operation of the tire at low air pressure, a maximum of sidewall flexing without incurring sidewall damage, and at the same time permits the possibility of changing tires under field conditions which may include insufficient tools and poor working conditions.

This latest member of the tire family is capable of carrying a tire load of 17,500 lbs. at 20 mph. It weighs 1,482 lbs. The main reason for its construction is its ability to carry big loads over soft, swampy terrain.

• They're bigger and broader! R. G. LeTourneau inspects latest and largest tire made according to his specifications. Ten feet tall and 4 feet wide, it's called the special "48 x 68."

Contract California Dam

A contract for construction of the Nimbus Dam and Power Plant on the American River, about 15 miles northeast of Sacramento, Calif., has been awarded by the Bureau of Reclamation to Winston Brothers Co., and Al Johnson Construction Co. of Monrovia, Calif., on a low bid of $6,067,353.50.

The installation, an integral part of the California Central Valley Project,

• In tests, a Tournapull rides on the big new tires which hold 10-15 pounds of air pressure.

DREDGES

HYDRAULIC
DIPPER
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

RENT INTERLOCKING STEEL SHEET PILING

"FASTER from FOSTER"

ALL LENGTHS & ALL SECTIONS TO MEET ALL YOUR JOB NEEDS

Foster's lower rental rates on all standard piling sections give you a low fixed expense as an added competitive advantage when bidding on jobs. You can always count on reliable service! RENT: Pile Hammers and Extractors.

Write for New Piling Bulletin EE-9

L. B. FOSTER CO.

PITTSBURGH 30, PA. CHICAGO 4, ILL.
NEW YORK 7, N.Y. HOUSTON 2, TEX.

"Let the shovel go . . . but hang on to that DIPPER"

When the preference for an Amsco Dipper is so strong that a superintendent at one of Minnesota's largest iron mines quietly removes it from a shovel being shipped to another mine, there are apt to be some good performance reasons why!

The superintendent reported that this AMSCO 6½ yard renewable lip dipper *loaded a record number of tons per 8 hour shift*—more than had ever been loaded before. And, where other dippers needed repairs every 2 months or so, it is still going strong after 6 months of service with no repairs of any kind!

Better design and construction are the reasons for this high production and longer, uninterrupted service. The wide mouth and shallow depth permit faster, easier digging and loading, and a 4-way taper insures clean dumping every time.

And, this dipper is *all-cast*—of tough, work-hardening AMSCO Manganese Steel. The renewable lip and heel plate, when finally worn, are replaceable in a matter of minutes.

Dippers can—and should be—bought with an eye to higher digging efficiency and lower costs per ton . . . and the moral of this actual on-the-job example is clear . . .

WHEREVER YOU MEET A PROBLEM OF WEAR CAUSED BY IMPACT AND/OR ABRASION . . .

. . . find out about longer-lasting, dollar-saving Manganese Steel Dippers made by AMSCO . . . world's largest producer of manganese steel castings for all industry.

AMSCO controls impact and abrasive wear in 5 basic industrial operations:

Power Transmission

Mining and Excavating

Transportation

Crushing and Pulverizing

Materials Handling

Brake Shoe **AMERICAN MANGANESE STEEL DIVISION**

373 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que. Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

• Above: The Caterpillar D4 Tractor is prepared for delivery to bottom of Crooked River Canyon. Machine was dismantled on platform located on bench 500 feet above swiftly flowing Crooked River, lowered to landing as shown below.

will serve as an afterbay for the regulation of water discharged through Folsom Dam further upstream. The power plant will provide 13,500 kilowatts of hydroelectric generating capacity for power-short areas in the valley. The 162,000-kilowatt Folsom power plant is being constructed by the bureau, who will market the hydroelectric energy output.

The Nimbus contract just awarded calls for construction of a dam, 1,100 feet long and 64 feet high, a reinforced concrete power plant structure 120 feet long, 85 feet wide, and 85 feet high, and related excavation and construction work. Under the agreement, work must be begun within 30 days after notification to proceed, the power plant finished in 765 days, and the entire job completed in 860 days.

Construction Association Opens Kansas City Office

The Heavy Constructors Association announced the opening of new offices for the Kansas City area. The offices are located at 515 Board of Trade Bldg. in Kansas City, Mo.

Aerial Tractor Delivery Meets Success in Oregon

Spectacular delivery of a Caterpillar D4 tractor and bulldozer was made recently by Poole-Krieger Implement Co., a dealer at Redmond, Ore., to a purchaser who wanted the machine delivered to the bottom of picturesque and awe-inspiring Crooked River Canyon.

Opal Springs Water District, a privately owned concern furnishing the major portion of the domestic water supply for the towns of Culver, Madras, and Metolius in Jefferson County, as well as water for many farms in that county, purchased the machine to aid in construction of a new canal, to divert water from the river to power new pumps increasing the gallonage of water pumped out of the canyon. Opal Springs is a pure water spring of unlimited quantity gushing from the bottom of Crooked River Canyon, next to Crooked River.

From the surrounding country to the river bed at Opal Springs is 1,000 feet down. There are two ways to get to the bottom of the gorge—a tortuous trail down the cliff and a highline constructed on a bench 500 feet straight up from the river bed. On this bench there's a 30-ft. highline tower and winch platform, the line covering a distance of 1,500 feet from the tower to the landing below.

To make delivery of the tractor-bulldozer, Poole-Krieger dismantled the machine into loads of four tons

or less to correspond with the winch capacity, and lowered the machinery to the landing in one day. The machine was reassembled the following day and promptly went to work building the canal.

Depict Mobile Living in Trailer Association Film

A 25-minute sound color motion picture about mobile living entitled "You Can Take It With You," has just been released by the Trailer Coach Manufacturers Association. The film is available for presentation in schools, by civic groups, on military posts, or other associations, according to Edward L. Wilson, managing director of the association.

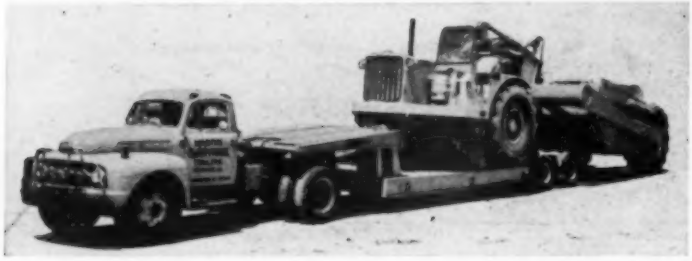
The film depicts the mode of living for more than 1.7 million Americans currently dwelling in mobile homes. This trailer coach population is made up largely of military men whose transportable homes enable them to keep their families together, of defense and construction workers whose jobs demand mobility, and of retired people.

The film shows a typical modern mobile home equipped with full kitchen and bathroom and including a living room and one or two bedrooms. The story concerns a young construction engineer who travels.

DON'T TAKE OUR WORD
Ask successful contractors about Omaha Dragline Buckets. These buckets have been in demand for all types of jobs for over 40 years. All unnecessary weight eliminated in Omaha buckets . . . yet not a bit of strength sacrificed. Available in four types. Write for catalog giving complete description and specifications.
OMAHA
DRAGLINE BUCKETS
DRAKE-WILLIAMS-MOUNT • OMAHA, NEBR.

NEWCO WIRE ROPE
CLAMP
AND THIMBLE
SIZES TO FIT WIRE ROPES FROM ¼" TO ⅞" IN DIAMETER
DEVELOPS 85 TO 90% OF ULTIMATE ROPE STRENGTH (95-100% CATALOG LIST)
THE HEAVIER THE LOAD THE TIGHTER IT HOLDS!
PAT. PEND.
NEWCO
The most efficient attachment for wire rope because of combined strength and design. Permanent castings, standard replaceable bolts and nuts. NO WRONG SIDE—threads either way. Easy to install in field or shop, and never needs lubricating.
See your distributor or write direct to
NEWMAN MFG. CO.
DEPT. E9 BOX 5905 KANSAS CITY 2, MO.

Equipment You Ought to Know About



Trailer

Manufacturer: Martin Machine Co., Kewanee, Ill.

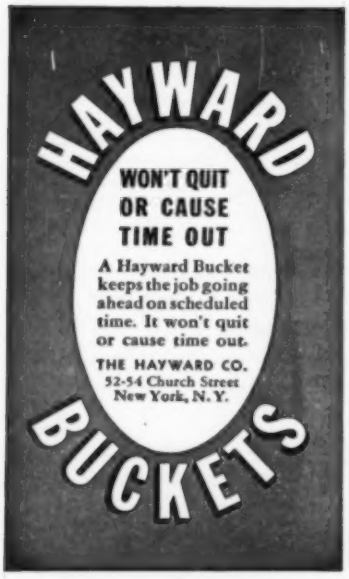
Claims: Utilizing the advantages of the "Folding Gooseneck" a method of loading and hauling heavy two-wheel equipment such as the Caterpillar DW21 tractor and No. 21 scraper, yet keeping within legal weight limitations has been developed.

The trailer, designated as the F4T-21, is a variation of the "Folding Gooseneck" trailer. Removable wheel chocks have been added to the platform and the rear kick-up has been redesigned for proper clearance and load distribution.

The trailer has been tested with the "Cat" DW21 tractor—No. 21 scraper unit. The "Folding Gooseneck" is lowered and the front chocks removed. The tractor-scraper pulls alongside, with the tractor slightly ahead of the front end of the trailer. The tractor is then backed onto the wide platform, jackknifing the scraper until the drive wheels rest against the rear chocks. The front chocks are secured in place and the winch equipped truck-tractor raises the gooseneck to hauling position. When the truck and trailer drive away, the body of the scraper swings over the back end of the trailer and the rear wheels of the scraper trail behind.

The wide spread load distribution enables contractors to road their heavy two-wheel earthmoving equipment and still remain within legal load limitations. A tandem axle truck-tractor must be used. The axle load on the truck-tractor and trailer tandem is well distributed to stay within the 32,000-lb. load limitations allowable in most states.

The F4T-21 is the first trailer designed for this purpose. However, it is not a single purpose trailer. Having a standard 8 x 14 ft. platform, it enables the contractor to haul other equipment ordinarily hauled on low-bed trailers. The trailer frame is constructed of wide flange structural steel beams. The gooseneck lowers to form a ramp with 4° slope. The platform is seasoned hardwood and 9.00 x 15 12-ply tires are used.


HAYWARD
WON'T QUIT
OR CAUSE
TIME OUT
A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.
THE HAYWARD CO.
52-54 Church Street
New York, N. Y.
BUCKETS

Wire Rope Splicer

Manufacturer: Quay Industries, 100 Barr Bldg., Washington, D. C.

Claims: The "Torquemaster" No. 10 represents refinements to the No. 9 following some three years of research and development. Tested by both heavy industry and the armed services, it is designed to meet the most exacting requirements and to stand up to the punishment of the stiffest construction wire rope, and to give speed and ease of operation to even the inexperienced worker. Its ability to overcome cable torque through a resistance regulator and swivel action jaws makes possible savings in splicing man-hours of 50%.

The No. 10 is designed to handle ⅜ to 1¼ in. wire rope. The resistance regulator which enables the operator to overcome cable torque has been redesigned and relocated so as to provide precision adjustment. The screw parts are all Acme thread, heat treated and stress proofed.

Dual-Purpose Oil

Manufacturer: The Texas Co., 135 E. 42nd St., New York, N. Y.

Claims: The internal combustion engine which is temporarily taken out of service for purposes of storage or shipment presents a special problem. It must be properly lubricated for service preceding or following the stand-by period, and it must be protected against rust and the acidic products of combustion while it is not being used. In the past it has been necessary to accommodate these separate needs with separate products. The lubricant was drained from the engine and a preservative put in, and vice versa, depending, of course, upon whether the engine was going in or out of service.

Extensive research covering all aspects of this problem has resulted in the development of a new dual-purpose product by the Port Neches, Tex., laboratories of the Texas Co. Produced in two grades, preservative oil 10 and 30, functions both as a lubricant and as a preservative. It eliminates the need for handling two products successively. The time which is saved is a critical consideration in the instance of military vehicles being shipped to

How Bucyrus-Erie Drills Give You

Extra
DRILLING FOOTAGE ...EVERY SHIFT

FAST-working Bucyrus-Erie Blast Hole Drills deliver P-O-W-E-R at the point of impact that pushes holes down fast. Here's what makes that power add up.

Rapid, Even Drilling Rhythm Bucyrus-Erie drills travel at the rate of between 55 and 58 evenly spaced strokes per minute. This fast, even stroke coupled with the sharp hit-and-snap-up action provided by the derrick head shock absorbers shatters rock in a hurry.

Long Stroke Bucyrus-Erie drills match smooth drilling motion with a long stroke. (46-in. maximum for 42-T, 44-in. for 29-T, 40-in. for 27-T, 36-in. for 22-T.) It's this long stroke that multiplies the impact of the tool string.

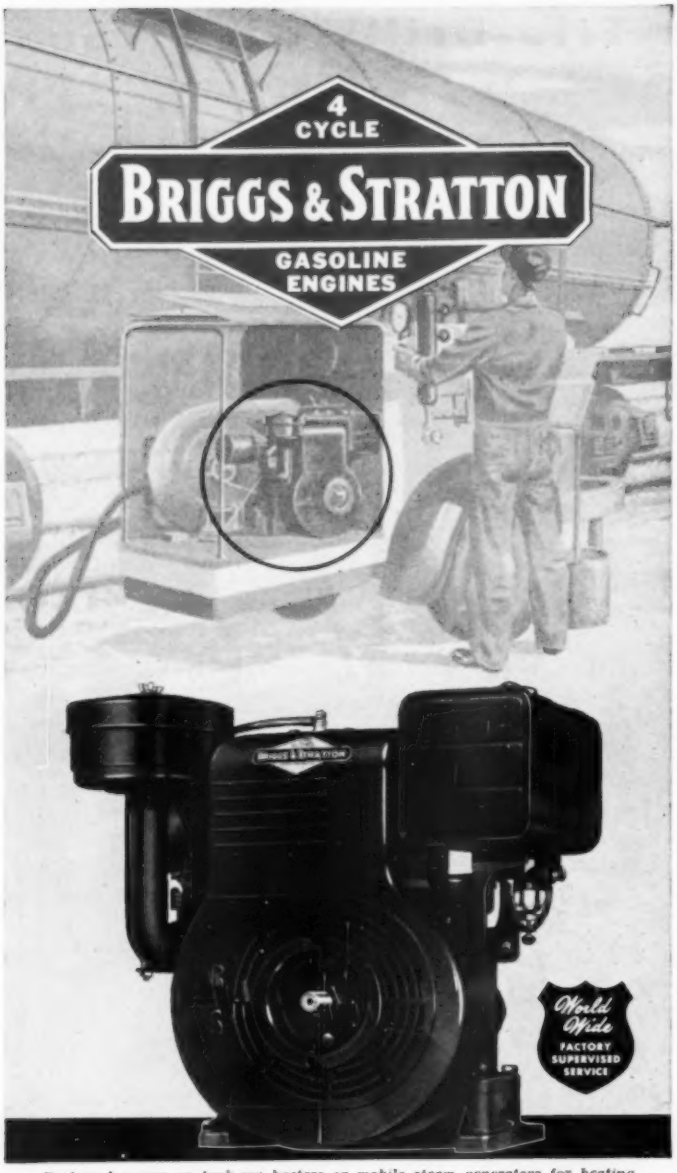
Tool Strings of Maximum Weight Bucyrus-Erie drills can handle extra tool strings because these rigs combine strong, rigid steel construction with plentiful reserve power. Add heavy tool strings to fast, sharp action and a long stroke and you have the answer to Bucyrus-Erie's leadership in high-speed, low-cost hole footage. 126852

There are many additional reasons why Bucyrus-Erie's are the Big Four of blast hole drilling. Write for full details.

22-T	5⅞"	to 6⅞" holes
27-T	6"	to 6⅞" holes
29-T	6"	to 9" holes
42-T	9"	to 12" holes

Diesel or electric power is available for all machines, gasoline for all except 42-T.

BUCYRUS ERIE SOUTH MILWAUKEE, WISCONSIN



Preferred power on tank-car heaters or mobile steam generators for heating tank-cars of road oil and bitumen — the world's most widely used single-cylinder gasoline engines on machines and equipment for the construction industry, railroads, oil-fields, and for farms and farm homes.

Whether you build, sell, or use gasoline-engine powered equipment — you are assured of maximum performance and foremost value when the power is a Briggs & Stratton single-cylinder, 4-cycle, air-cooled gasoline engine.

Briggs & Stratton Corporation,
Milwaukee 1, Wisconsin, U.S.A.

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

an area where they may have to "come out fighting."

Research experts carried out long-range investigations into such factors as humidity, condensation, corrosion and related phenomena. The resultant product combines special additives developed to ensure maximum preservation of internal engine surfaces with motor oil additives of the type used in heavy duty lubricants. Preservative oil 10 and 30, incorporates characteristics which in some instances exceed by five-fold the requirements of military specifications. For example, one test requires that steel panels, which have been dipped in preservative oil, should remain free of corrosion after 200 hours' exposure in a humidity cabinet at 100° F. and 95-100% relative humidity. The new formulation gave protection for more than 1,000 hours.

In addition to its application in the engines of vehicles scheduled for storage or shipment, the new lubricant-preservative has proved useful in other internal combustion engines in intermittent service. Examples of the latter are stationary engines and engines in farm vehicles. Preservative oil 10 and 30, when functioning as a lubricant need not be changed until the engine has reached the normal drain-and-refill point. It is compatible with qualified heavy-duty motor oils.

Truck Hoists and Bodies

Manufacturer: Converto Manufacturing Co., 3rd and Green Sts., Cambridge City, Ind.

Claims: The line of PicUPac truck bodies and hoists for trucks ranging

from ½, ¾, and 1-ton in size has been expanded to include a new medium-duty line of hoists and bodies. This new medium-duty line of bodies and hoists is manufactured for trucks of 1½, 2, and 2½-ton sizes. New ad-

ditions for heavier-duty lines are being built and tested.

At present the company manufactures two styles of hoists. The "double arm" type hoist is used for extreme loads, while the "direct" hoist is used for average loads and is lower priced. Both hoists elevate the truck body to a full 60° dumping angle in a matter of seconds. The manufacturer has added 8-gauge steel on the floor of the body for additional strength and has established 6½ feet as its standard body width as compared to 6 feet generally used. Both features have been added at no additional cost to the user. Another cost-saver is the recent innovation of a delivery system from the factory, reducing freight expense.

Highway Tractor

Manufacturer: Autocar Co., Ardmore, Pa.

Claims: The power plant is an eight-cylinder, high-compression V engine. Manufactured in 142-in. and

159-in. wheelbase lengths, the tractor, a light-heavy, is designed to handle large payloads. It is listed in this line of heavy-duty trucks and tractors as Model C-85-T—and as the V-8.

The V-8 engine is engineered to specifications by the Le Roi Co., of Milwaukee. It develops 207 hp at 3,000 rpm and, weighing only 1,250 pounds, has a lower weight-horsepower ratio (six lbs. per hp) than any comparable truck or bus engine.

Because it is compact, only 43 inches long, with a comparatively short crankshaft, and has a short 4½-in. stroke, minimum-radius rotating parts and carefully designed structural strength, the engine runs evenly, without vibration, despite a high compression ratio of 6.7 to 1.

Welder

Manufacturer: Harnischfeger Corp., 4400 W. National Ave., Milwaukee 14, Wis.

Claims: A new limited type input welder is introduced around the theme, "Save time and money by doing your own welding." This model,

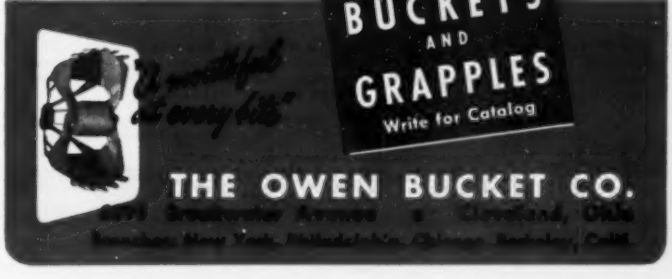
This 4-ton traveling crane of well known high quality expends its energy and efficiency through this 3-ton capacity.

OWEN BUCKET

Clay discharged into the craneway is water treated by fog-nozzles to reduce dust and increase water content to aid in ageing.

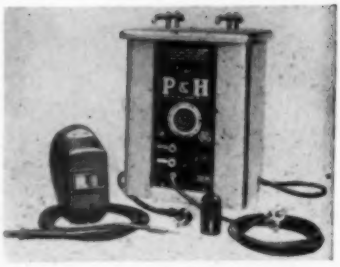
The 15,000-ton capacity warehouse 840' x 50' is serviced by two cranes and two buckets. Only two men are required to move the clay, combine the mix and feed the bins for the dry pan.

All of which simply proves again that for the greatest returns on the large investment in the crane it is also wisdom to buy the most efficient bucket available —an OWEN!



with a high open circuit voltage of 65 volts, boasts a welding range of 20 to 180 amperes, making it ideal for welding thin fender metal on up to repair-welding of such heavy steel as tractor hitches.

This model is the only limited input type welder with "Dial-Lectric" control. Just a three-quarter turn of the knob provides continuous heat control from minimum to maximum capacity. Machine has both high range, for general purpose welding, and low range, for light gauge welding. Tests show this welder uses about 1 kw-h



of electricity per hour of operation.

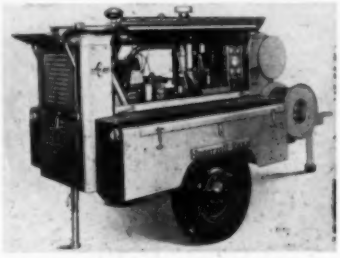
The welder comes fully equipped with all accessories, including cords, cables, welding helmet with protective lens, P&H welding electrodes, and an illustrated welding manual. For full information on the Model TR-181 welder, write for Bulletin W-71-3.

Portable Compressors

Manufacturer: Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

Claims: The introduction of 315, 210, and 105 cfm units makes the advantages of the rotary sliding-vane design available for a wide range of operating requirements. Major benefits claimed by the manufacturer are simplicity and low cost of operation.

The two-stage, oil-cooled, rotary sliding-vane compressor design of the Gyro-Flo machine eliminates most of the problems of reciprocating units for portable service. There are no valves to leak, no pistons, rings, rods, or clutch to wear. Air, discharged at less than 200° under normal operating



conditions, together with thorough oil separation, eliminates hose deterioration caused by heat and oil. The continuous rotary action provides a steady flow of air without pulsations or vibrations.

It is equipped with "Air Glide" capacity control, the only stepless system that controls the air output smoothly over the full range from 0 to 100% capacity. This combines variable intake unloading of the compressor and "Floating Speed" control of the engine. Throughout the entire capacity range the air pressure stays between 100 and 110 psi, assuring uniform work and more work done by drills and other air tools.

The 600 cfm model is powered by a General Motors Diesel engine. The 315 and 210 cfm sizes offer a choice of either GM Diesels or Continental Red Seal gasoline engines. The 105 uses a Continental gasoline engine.

Gyro-Flo portables are easy to maneuver in the roughest terrain because they weigh up to 40% less than reciprocating machines of equal capacities. For instance the 600 cfm model weighs 9,500 pounds and the 105 is 2,630 pounds.

"My company, in 1932 installed a Sauerman Slackline Cableway purchased from an English agent of Sauerman Bros., Inc. This plant, normally maintained, is as good today as when we bought it. Between 1932 and the end of 1951 it excavated and yielded to the hopper 2,222,783 tons and we expect it to continue producing at this rate for possibly ten more years before it is retired. I give the equipment a high rating for performance. Up to 1952, the capital cost divided by 19 years' output amounts to less than 1/3 cent for each ton handled. Maintenance expense of the machine over this period also has been moderate."

Mr. C. Maw, Director
Stanley Ferry
Gravel Co., Ltd.

SAUERMAN
Slackline Cableway

The excavation and movement of material to the screens at the plant of Stanley Ferry Gravel Co., Ltd., Leeds, England, has been a "one man, one machine" job since 1932, handled entirely by the Sauerman Slackline Cableway shown in the picture above.

During this period the Sauerman machine has moved over two million tons of gravel at a capital cost of less than one-third cent a ton, and with a nominal expense for repairs continues to give as good service as when new. Its operating cost is so low, the owner wishes it would last forever.

The deposit is tightly packed and contains many submerged swamp trees. Water table is 9 ft. below ground level, and the gravel extends to a depth of 30 ft. The material is very abrasive. Altogether it is a tough test of a machine's power, range and durability.

The Sauerman machine operates on a 750 ft. span from a steel mast 90 ft. high, and soon will have taken out all the aggregate within its reach. Then the mast will be moved to a new location approximately 900 ft. from where it now stands. This will be the third move. The first pit excavated by the cableway is behind the mast in the background.

The 150 h.p. machine digs and conveys 100 tons per hour, delivering to a cantilevered hopper on the mast. A ropeway conveys the material from the hopper to the screening plant located on a highway 1,000 ft. away. The cableway could produce considerably more than 100 t.p.h., but is limited by the capacity of the ropeway.

This 19-year old installation is just one of many Sauerman installations scattered through every state in the United States and in many foreign countries that have proved wonderful long term investments for their owners, while maintaining large daily output at small expense.

For complete details and illustrations of the different sizes and uses of Sauerman Slackline Cableways, write for the new, free 24-page Catalog C.

Rope Haulage Equipment Specialists Since 1909

SAUERMAN BROS., Inc.

574 S. Clinton St. Chicago 7, Illinois

"Eucs" are Steady Workers!

BECAUSE they're designed and built exclusively for heavy off-the-highway service, "Eucs" can take the toughest jobs in stride. Euclids are steady workers ... they've earned their reputation for job availability and profitable performance on a wide range of work. On long hauls or short hauls, large jobs or small, Euclids move big loads faster and at lower cost.

For moving earth, ore, rock, or coal ... for construction of dams, levees, airports, and highways ... for mine, quarry or industrial work, Euclids have the speed and capacity to cut your hauling costs.

Put "Eucs" on the job and be on more jobs. Learn why users say that Euclids actually cost less to own per ton or yard moved than any other off-the-highway hauling equipment. Your Euclid Distributor has the facts and figures.

The EUCLID ROAD MACHINERY Co.
Cleveland 17, Ohio
CABLE ADDRESS, YUKLID. CODE: BENTLEY

Bottom-Dump Euclids have struck capacities of 13 to 25 cu. yds. ... diesel engines of 190 to 300 h.p. ... top speeds loaded up to 34.4 m.p.h.

Rear-Dump "Eucs" range in capacity from 10 to 34 tons ... top speeds loaded up to 36.3 m.p.h. ... diesel engines of 125 to 400 h.p.

EUCLIDS

Why you're WAY AHEAD with BUCYRUS ERIE Matched Equipment

Designed as a Team — Bucyrus-Erie equipment for the TD-24 was developed right along with this modern tractor — every unit has matched characteristics of weight, size, capacity and balance to take fullest advantage of its power.

Wide Choice to Fit Your Needs — A complete line of equipment for the TD-24 is offered you by Bucyrus-Erie. Here you will find just the right working combinations to fit you needs.

Backed by Unequalled Experience — Each of the units in this broad line is backed by more than 70 years of experience in building tens of thousands of earthmoving machines, and by resources and facilities unique in the industry.

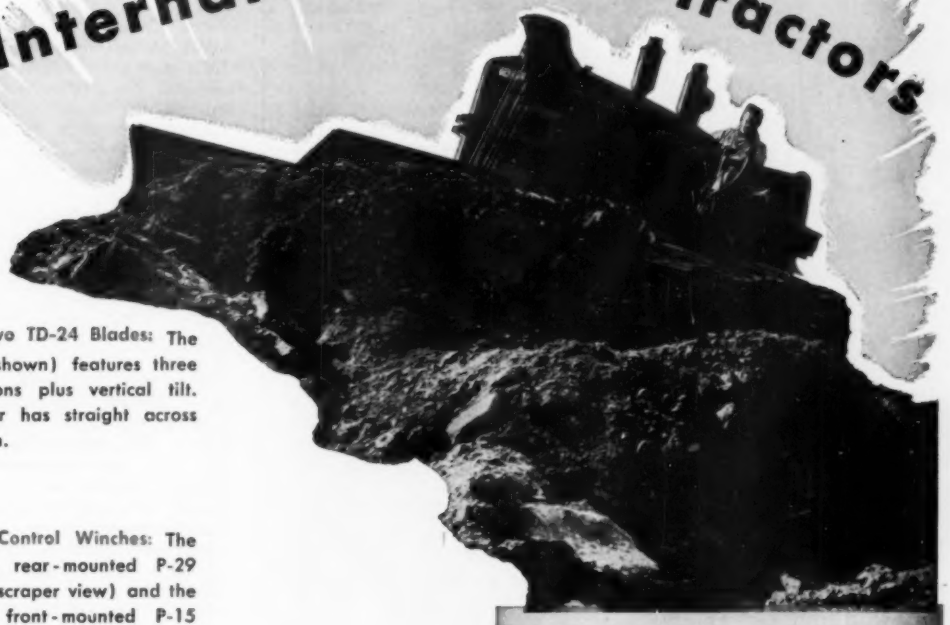
BUCYRUS-ERIE CO., South Milwaukee, Wisconsin

The BIG RED TEAM

Two Big-Capacity Scrapers work with the TD-24: The B-170A with 16-yd. struck capacity is the biggest of scrapers for loading without pusher help. The 22-yd. (struck) B-250 is the largest scraper in current production.

Let Your International Industrial Tractor Distributor give you more reasons why you are ahead with Bucyrus-Erie matched equipment.

for International TD-24 Tractors



Choice of Two TD-24 Blades: The Bullgrader (shown) features three blade positions plus vertical tilt. The Bulldozer has straight across blade position.

Two Power Control Winches: The double-drum rear-mounted P-29 (seen in the scraper view) and the single-drum front-mounted P-15 (shown with the Bullgrader).

The CR-4 Ripper is designed to withstand the power of two TD-24's — one pulling and one pushing.

12752C

Four Pusher Plates: One mounts directly on tractor frame (shown here). Others mount on Bullgrader frame, Bullgrader blade or Bulldozer blade.

See Your International Industrial Tractor Distributor

The MAJORITY of Your
Heavy Hauling Jobs
can be handled
PROFITABLY with...
the POPULAR

ROGERS Type "T"

LARGE CAPACITY IN AN 8 FT. DECK WIDTH—LEGAL IN ALL STATES. 8 TIRES ON 2 ROCKING STUB AXLES WITH LEVEL OR DROP DECK IN 15, 20, 25, 30 and 35 TON CAPACITIES

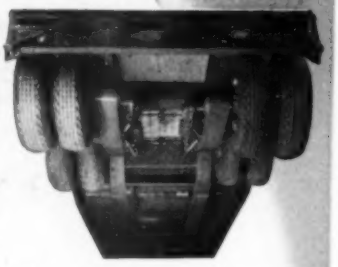
By reason of its versatile adaptability to all kinds of heavy hauling jobs, the Rogers Type "T" has steadily increased in popularity.

It's a "natural" for small and large contractors and haulers.

If you are considering the purchase of one or more trailers, by all means investigate the Type "T".

It packs powerful advantages in a multi-purpose single unit.

Write for full details and catalog.



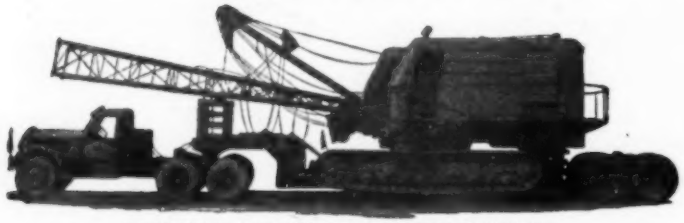
A worms-eye view of the sturdy rear end and frame construction of the famous "T".

The rear end design of the Type "T" has proved so efficient it has been adopted as standard construction in Rogers Power-Lift Detachable Gooseneck Trailers.

EXPERIENCE builds 'em — PERFORMANCE sells 'em

ROGERS BROS. CORP.
ALBION, PENNA.

136 ORCHARD STREET



"RODGERS I BEAM OR GIRDER TRAILER"

New trade literature

Subject: **Portable Mixer**

Content: A new eight-page, two-color bulletin on the new Mixall, portable, one-unit, dryer-mixer describes the mixer as the answer to the need for quality hot patch material. The Mixall was designed to prepare and mix material for patching breaks and failures in both bituminous and concrete roads and streets. Pointing out that for the first time street and highway departments have available an easily portable machine for on-the-spot production of the same high-type mix used in the original pavement, the booklet graphically demonstrates the Mixall's operations. Typical operating capacities are presented along with a discussion of the design considerations behind the development. Design and operating features, such as grouped controls, low 14-in. loading height, and all-welded channel steel frame are pictured and described. Condensed specifications are included in the component page. Elsewhere in the booklet is shown the high-discharge feature that makes charging a wheelbarrow easy. The bulletin brings out several allied usages for the equipment that should be of interest to contractors. It is claimed that the Mixall produces Portland concrete mixes of a lower slump than conventional mixers. It is pointed out that the machine can be effectively used in thawing as well as drying and heating frozen aggregates, also in thawing abrasives for winter-skid control.

Where to get: Barber-Greene Co., Aurora, Ill. (Bulletin 804)

Subject: **Rubber-Tired Trenchliner**

Content: A new bulletin has been issued summarizing the principle operating features of the Model 88 Trenchmobile. Recently introduced, this unit is a mobile, rubber-tired trenchliner designed to handle all types of utility trenching assignments. Field photographs are used in the new bulletin to illustrate some of the many outstanding features incorporated in the utility size Trenchmobile, such as: The telescopic ladder-type boom for undercutting sidewalks and old mains; controlled discharge through the reversible and shiftable belt conveyor; the hinged crumber that permits making vertical set-ins; fric-

tion clutches for controlling boom hoist, engine and bucket line speeds; self-sharpening "Tap-In" bucket teeth for top digging production and the positive down-crowd digging boom that maintains accurate grade.
Where to get: Parsons Co., Newton, Ia.

Subject: **Frost Action in Soils**
Content: *Frost Action in Soils* is a 385-page symposium devoted to a presentation and discussion of papers dealing with the following topics: Climate and distribution of soil, soil temperature and thermal properties of soils, soil moisture and moisture movements, basic data pertaining to frost action, frost action and spring breakup, remedies and treatments, and needed research pertaining to frost action. The symposium contains many charts, maps, and photos to accompany the papers prepared by well-known authorities.
Where to get: Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. (Publication 213 — $3.75)

Subject: **Motor Graders**
Content: A new, illustrated maintenance guide for No. 12, No. 112, and No. 212 Caterpillar motor graders has been released. The 24-page, cartoon-type, 4-color pamphlet points out that 99% of all Caterpillar motor graders are still at work and then goes on to explain that, despite quality and maximum service, life of the motor grader depends upon care given by its operator. The sketches and text then detail various adjustments that may be made, cautions to be taken in servicing, and tips on such points as tire care.
Where to get: Caterpillar Tractor Co., Peoria 8, Ill. (Form No. 30248)

Subject: **Back Hoe**
Content: A new illustrated folder covering a ⅜-yd. truck-mounted back hoe includes detailed engineering information on mechanical features, together with a large chart showing dimensions and operating data for the hoe. It is said to dig up to 100 feet of 5-ft. trench per hour, with a maximum working depth of 14 feet. The folder also includes specifications on the company's interchangeable 2½-ton crane adapter and two types of backfill blades which permit complete handling of the job of pipe unloading, trenching, placement and backfill with one machine and one operator.
Where to get: Schield Bantam Co., Waverly, Ia.

Subject: **Compressor Line**
Content: Four bulletins describe the new Gyro-Flo compressor line. In addition to photographs and drawings, specifications are listed and a chart showing the air tools each type of compressor will operate is also included. The model numbers for the line are 105, 210, 315 and 600. The bulletin points out that the Gyro-Flo is the most revolutionary design change during the company's 50 years in the portable compressor field and is matched to the higher-speed performance of modern Diesel or gasoline engines.
Where to get: Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

Subject: **Diesel Tractor**
Content: Subject of a new catalog is a 43 drawbar horsepower Diesel tractor of value in construction, logging, mining, and oil field work. The catalog explains, part-by-part, how the tractor is built and how it performs. Attachments and specifications are listed. Reports from owners on typical jobs are shown. More than 30 photographs and many other illustrations are included in the 32-page booklet.
Where to get: Caterpillar Tractor Co., Peoria 8, Ill. (Form 30291)

Riggers PLAY IT SAFE on "high wire" jobs!

...that's why they demand GENUINE

CROSBY CLIPS

Drop-forged, hot-dip galvanized wire rope fasteners
SIZES FOR ⅛" TO 3" WIRE ROPE
DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO.
ST. PAUL 1, MINNESOTA

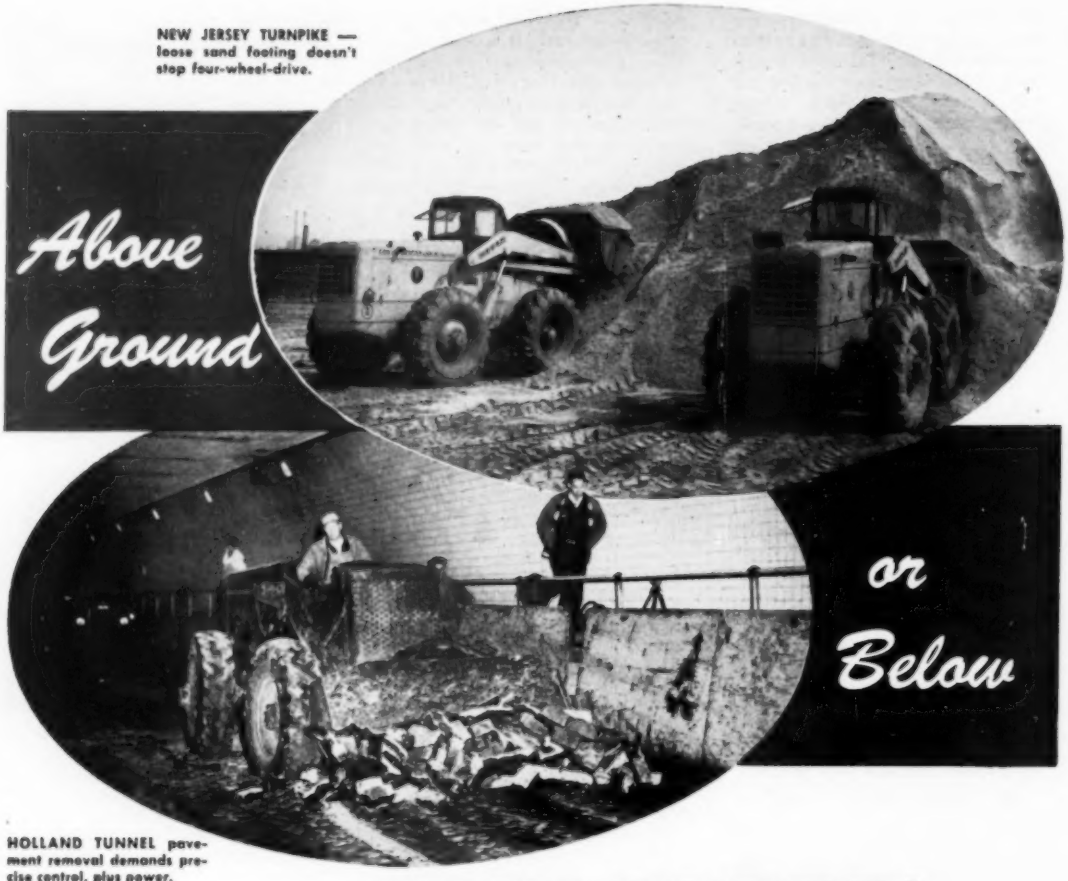
HOW TO GET *Larger* BUCKET PAYLOADS

This new Erie Catalog makes it possible to quickly choose, from the 4 classes of Erie 2-Line Buckets, the right bucket for *your* crane and material. Perhaps your crane can operate a larger bucket, for Erie alloy welded steel buckets result in greater payloads through scientific bucket weight reduction. Remember, that on bucket work, the cost of the crane and the operator all ride on the bucket. Send for this helpful catalog or outline your conditions and our engineers will make recommendations.

Write for Catalog **2L-1** *Today*

ERIE
STEEL CONSTRUCTION COMPANY
429 GEIST RD., ERIE, PA.

NEW JERSEY TURNPIKE — loose sand footing doesn't stop four-wheel-drive.



HOLLAND TUNNEL pavement removal demands precise control, plus power.

PAYLOADER®

Versatility Pays Off

WHETHER on the New Jersey Turnpike construction or Holland Tunnel repaving, the combination of four-wheel-drive, large pneumatic tires and *power* of this big, compact 1½-yd. "PAYLOADER" tractor-shovel pays off. It has fast-action traction on all kinds of footing — crawler-like traction at far less maintenance expense — PLUS speed when you want it. It has *versatility* to work on sand, mud, snow or clay and to travel over streets and highways at 16 mph.

This "PAYLOADER" also gives you easy operation and maneuvering speed with power-boosted steering and four speeds in reverse as well as forward . . . and is available with gasoline *or* diesel power. Hundreds of contractors are enthusiastic owners and boosters and once you've seen an HM in action you'll understand why. You'll find them on all kinds of construction projects from turnpikes to tunnels. The Frank G. Hough Co., 708 Sunnyside Ave., Libertyville, Illinois.

WRITE for full information on the Model HM or other "PAY-LOADERS." There are seven sizes from 12 cu. ft. to 1½ cu. yd. capacity.

NOT in the *Contract*

They were trying a motorist charged with a petty offense, when the judge asked: "Have you any one in court who will vouch for your good character?"

"Yes, your Honor," was the reply, "there's the sheriff there."

The sheriff showed signs of amazement. "Why, your Honor," he declared, "I don't even know the man."

"Observe, your Honor," said the prisoner triumphantly—"Observe that I've lived in the county for twelve years and the sheriff doesn't know me! Ain't that character for you?"

A second-grade teacher, reviewing the year's work, inquired of her pupils: "Who can tell us where the home of the swallow is?"

After some hesitation, a pudgy youngster held up his hand, "I think," he asserted, "that the home of the swallow is in the stommick."

The lady of the house was entertaining her bridge club when she heard the pattering of little feet on the stairs. She raised her hand for silence. "Hush," she said softly, "the children are going to say their prayers. It gives me such a feeling of reverence to hear them—listen."

There was a moment of silence—then shyly, "Mama, Willie found a bedbug."

"My wife explored my pockets last night."

"What did she get?"

"About the same as any explorer—enough material for a lecture."

"How can you tell a lady worm from a man worm?"

"It's easy. A lady worm never signals when she turns."

The traveling salesman decided to seek a night's lodging at a farmhouse rather than drive to the distant town.

"Yip! I reckon we can take care of you for the night," said the farmer, "if you don't mind sleeping with a red-headed school teacher."

"I'll have you know," said the salesman indignantly, "I'm a gentleman!"

"So's the teacher," replied the farmer.

If you would speak for all to hear,
Avoid the flowing cup,
For after too much bottled cheer,
Your tang gets toungled up.

Judge: "You admit you drove over this man with a loaded truck. What have you to say in your defense?"

Driver: "Your Honor, I didn't know it was loaded!"

An enterprising sailor offered to smuggle a young woman to Hawaii and hid her in a lifeboat. After several days and nights had passed, with the sailor spending all his spare time with the girl, she began to worry why they didn't arrive at their destination.

Finally, she went to the captain of the boat, confessed and told him the whole story. Then she asked:

"When do we get to Honolulu?"

"Lady," the captain said, "this is the Seattle-Bremerton ferry."

An eastern business man was spending his vacation at a rural retreat down in middle Tennessee. The fishing in a private lake was wonderful. The wife of his host, a prosperous farmer, was an excellent cook. Each morning she served piping hot corn bread. The business man thought it was tops. But each evening he noted they sent a child out to "turn the chickens." This went on for two or three days and then his curiosity finally got the better of him.

"What do you mean by 'turning the chickens?'"

"Oh," replied the farmer, "our chickens roost on the corn meal barrel. Each night someone must go out and make sure their heads are turned in."

A puzzled little girl watched a party of fishermen putting off in their boat. "But, Mommy," she asked, "do the fishes like all that beer?"

The psychiatrist married a very ugly woman.

"I know," he told friends. "She's ugly, she has a bad figure, she limps, she's cross-eyed and stupid—but, boy, what nightmares she has!"

"Guess you were right, Stewart. Looks like we're gonna have to crib it."

BUCYRUS ERIE 6 YARD

150-B Brings POWE

NEW SPEED, R, CAPACITY

to loading and stripping

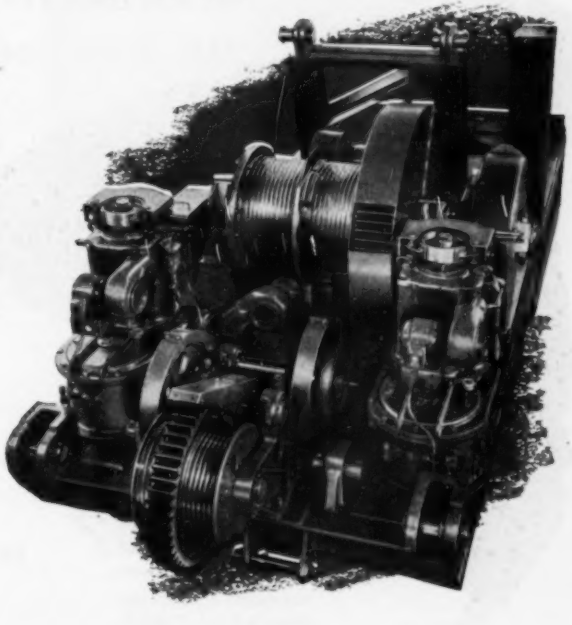
ADDED to the time-proved superiorities of design and construction which have made Bucyrus-Erie quarry and mining shovels traditionally "years ahead" are important features new to an excavator of this size, yet *thoroughly proved in the field*. Among these 150-B features are:

Exclusive Two-Section Boom with tubular dipper handle free to rotate in saddle block. Used with outstanding success on Bucyrus-Erie's large stripping shovels, this design speeds the working cycle and permits increased *payload* because it reduces front end weight materially yet provides enormous strength. Upper section carries only load resulting from pull of ropes, strong trussed lower section transmits directly to the revolving frame the vibrations, torsional and shock loads set up in digging. Rope crowd is quiet, positive, with crowd machinery located on the deck.

Powerful New Main Machinery designed for double twin hoist smoothly delivers power where you want it, when you want it. Hoist machinery pulls dipper straight through tough banks with steady positive action. Fast, smooth swing, with quick acceleration and deceleration, shaves seconds off every cycle.

Larger Stronger Mounting has new propelling machinery arrangement, which provides rapid engagement of the propel for fast move ups. Cored box-section tread links have separate flame hardened wearing paths for rollers and driving tumblers. Cat belts have high wear resistance, stay in adjustment for long periods.

The 150-B has full Ward Leonard independent motor control, is fully convertible to dragline service, features numerous other design advances that make it truly "years ahead". 1152C



BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

Notes from the manufacturers

Allis-Chalmers Manufacturing Co., Milwaukee 14, Wis., has elected R. S. Stevenson executive vice president of the company. Stevenson, before he was elected to this company-wide post, was vice president in charge of the tractor division. The board elected Willis G. Scholl, formerly vice president and general sales manager of the tractor division, to succeed Stevenson. Named to succeed Scholl as vice president and general sales manager was Frank Mussell, eastern territory manager of the tractor division. Stevenson has been associated with the tractor division since 1933 when he joined the Kansas City branch as a salesman. In 1950 Stevenson was named general sales manager of the tractor division and in 1951 vice president in charge of that division. Scholl joined A-C in 1936 as a salesman for the tractor division's branch at Columbus, O. He was named vice president and general sales manager of the division in September, 1951. Mussell who recently served in Washington, D. C. as director of the national production authority's agricultural machinery and implements division, came to Allis-Chalmers in 1936.

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed the Richardson Tractor Co., 601 50th St., Kanawha City, Charleston, W. Va., the distributor for Bucyrus-Erie ⅜ to 4 yd. gasoline, diesel and single-motor electric, convertible excavators, Red Arch dragline buckets and the Hydrocrane with its dragshovel front-end called Hydrohoe. The new distributor's territory includes the state of West Virginia, except the panhandle counties of Hancock, Brooke, Ohio and Marshall, plus the three most westerly counties of Maryland Garrett, Allegany and Washington. Also appointed distributor for the same line of products is the Border Machinery Co., 1710 E. Paisano Drive, El Paso, Tex. The El Paso firm's territory includes the seven southern-most counties of New Mexico — Grant, Hidalgo, Luna, Dona Ana, Otero, Eddy and Lea and the nine Texas counties west of the Pecos River—El Paso, Hudspeth, Culberson, Reeves, Pecos, Jeff Davis, Presidio, Brewster and Terrell. Both companies have a sales program supported by information or advice on earthmoving problems or equipment.

Caterpillar Tractor Co., Peoria, Ill., says that Herman G. Eberling has returned from army duties to be assistant manager of the Plains sales division. Eberling was a captain in the Caterpillar-sponsored 403rd Engineer Base Depot company. The company was stationed in Germany. Previously, he had served three years in Army Ordnance during World War II. He re-entered the service in 1950 and was discharged the 4th of June of this year. His career at Caterpillar began in 1933, following graduation from the University of Utah. Starting as a bench specialist, he became shop inspector in 1936, and in 1938 was transferred to the sales department as a Diesel lecturer. He advanced to sales training director by 1942 and that same year was placed in charge of service publications. Following army duty from 1942 to 1945, Eberling returned as a district representative and received his first assistant divisional

WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS

• Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

Want Facts?

Write for free descriptive bulletin.

CLAMSHELL • DRAGLINE
CUSTOM-BUILT BUCKETS
STONE AND WOOD GRABS

THE WELLMAN ENGINEERING COMPANY
7000 Central Avenue
Cleveland 4, Ohio

managership in 1948. Concurrent with Eberling's announced appointment, it was revealed that Gordon Fowler, present assistant manager of the Plains division, has left to join Burford Toothaker Tractor Co., the Caterpillar dealer at Montgomery, Ala.

Cummins Diesel Sales Corp., Columbus, Ind., has advanced to vice president W. B. Lawrence who was general manager for the past year and a half. Lawrence joined the organization in 1948 as the Rocky Mountain regional manager in Denver. He continues to serve as general manager of the eight dealerships operated by the sales corporation.

Easton Car and Construction Co., Easton, Pa., says that President Cottrell Farrell has left New York to visit cement producing centers in France and Italy. Many quarries in western Europe are now using American built Easton side-dump semi-trailers and truck bodies. Side-dump trailers and truck bodies of Easton design are also built in Europe under a regional manufacturing agreement. Farrell plans to study the manufacturing methods and facilities provided through Societe E. Constatin, Paris, and Dario Sobrino, Milan. He also expects to review the possibilities for introducing Easton side-dump haulage equipment to other off-highway markets, and will return to the United States by air early in September.

Harnischfeger Corp., Milwaukee, Wis., dedicated its new Diesel engine division in Crystal Lake, Ill., bringing to nine the number of plants now in operation. The new one-story building occupies over 100,000 sq. ft. and is located on an 80-acre tract of land. In this new building, which houses both the plant and general offices of the division, P&H expects to triple production of its line of 2-cycle Diesel engines, built in 1, 2, 3, 4, and 6-cylinder models up to 138 hp for stationary, mobile, and marine services.

Hyster Co., Portland, Ore., has appointed a new district manager in the mid-central territory. The post goes to Wilton G. Smith, who recently had been manager of the company's Washington office. Experienced in Hyster products and sales problems, Smith will work with the C. H. Ellis Co. of Indianapolis, Embry Bros., Inc. of Louisville, Ortner Co. and Industrial Handling Equipment Co. of Cincinnati.

Have you discovered these

'Hidden Values'

in Red-Strand wire rope?

You get 3 important, unseen values in Hercules *Red-Strand*.

The first is *extra endurance*.

The second is *consistently high performance*.

The third is complete *dependability*.

These values are made possible by Leschen's exacting insistence upon *higher-than-rated* quality . . . by precise, specialized manufacturing craftsmanship . . . and by the constant use of only the finest known grade of steel for long-lasting Hercules *Red-Strand* wire rope.

Service records prove these hidden values. Your records will too.

For saving's sake, then, put

Higher operating profits may be yours with Hercules *Red-Strand* wire rope. Talk it over with your Leschen wire rope specialist . . . before you place your next rope order. Or, write for bulletin.

A. Leschen & Sons Rope Co., St. Louis 12, Missouri

In business *only* to make wire rope — *better* wire rope — since 1857.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

BUCYRUS-ERIE 15-B hoe, crane, clam—1949.
INTERNATIONAL TD-9 loader—1950.
15 to 20-ton Low Boy drag—1948.

The J & V Rack Company
North Bend Rd. Cincinnati 11, Ohio Mo. 2654

Bucyrus-Erie 22-B No. 52226 shovel. Condition excellent. Cat diesel, 5600 hours service.

Bucyrus-Erie 22-B No. 59796 shovel. Condition excellent. Buda gas, 5000 hours service. Also Cat. D-318. New power unit for same.

Cat D-7 tractor with angle dozer—double PCU—new cats, idlers, motor overhaul, excellent condition.

Tatko Bros. Slate Co., Inc.
Middle Granville
New York

We Specialize
On Exclusively Used

mechanically sound, late model diesel Bucyrus-Erie and Northwest shovels, cranes, draglines and pullshovels. Our list of Bucyrus-Erie 15-B's, 22-B's, 38-B's and 54-B's and Northwest 25's, 6's, 80-D's and 95 machines is the most complete and comprehensive inventory of used machines of these models available. We also list walking draglines and all attachments.

J. C. French Company
226 Berry Parkway Park Ridge, Illinois
Tel. TAcott 3-4927

Northwest model 25; 6; 80D; 95. Manitowoc 6500; 4500 new — will rent. Bucyrus 54-B; Monighan 5W; 7W; 9W; 450.

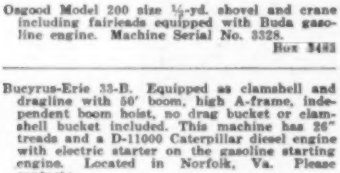
A. W. Nevers Phone 32 Mt. Pleasant, Iowa

Osgood Model 200 size ½-yd. shovel and crane including fairleads equipped with Buda gasoline engine. Machine Serial No. 3328.

Box 3481

Bucyrus-Erie 33-B. Equipped as clamshell and dragline with 50' boom, high A-frame, independent boom hoist, no drag bucket or clamshell bucket included. This machine has 26" treads and a D-11000 Caterpillar diesel engine with electric starter on the gasoline starting engine. Located in Norfolk, Va. Please contact:

Bemiss Equipment Corporation
Attn: Mr. W. C. Coleman
2219 Chamberlayne Avenue Richmond 22, Va.



One used Bucyrus-Erie 10-B Shovel front attachment. Good condition.

The Bode-Finn Company
2650 Spring Grove Avenue
Cincinnati 14, Ohio
Mulberry 2200

Two—7 yd. AX Bucyrus-Erie Red Arch dragline buckets with teeth and chains. A-1 condition.

Atlas Coal Company
Oskaloosa, Iowa

ALLIS-CHALMERS, Model HD-19 tractor with Gar Wood cable control tipdozer and double drum control unit.
BUCYRUS-ERIE 22-B shovel, dragline, and lifting crane.
CATERPILLAR, Model D-8 tractor with LeTourneau cable tipdozer.
NORTHWEST, Model 25 dragline with 40' boom and IHC engine.

For further information, contact

E. F. Craven Company
P.O. Box 538 Greensboro, North Carolina

DW10 Caterpillar hydraulic scraper Ser. 2010.
DW10 Caterpillar hydraulic scraper Ser. 2103.
DW10 Caterpillar hydraulic scraper Ser. 2375.
Model C1 Tournapull scraper 3T2032C1.
FD Cletrac tractor Ser. 8Y458.

J. C. Shawfield Company
Harrisburg, Pennsylvania Tele. 6-7931

Completely rebuilt standard bucket for 54-B, with bail and sheave, and
Counterweight (one piece) for 54-B.
Immediately available at considerable saving.

H. O. Penn Machinery Company, Inc.
140th Street and East River
New York 54, New York

3—Buda HP-326 gasoline engines, 6 cylinder, 3-3/16" x 4¾", Governor set @ 1600 R.P.M., complete with fittings. Bargain price $650 F.O.B. South Milwaukee, Wisconsin.

Bucyrus-Erie Company
South Milwaukee Wisconsin

NEW BELT CONVEYOR IDLERS

2000—30 & 36 IN. TROUGHING 6" ROLLS
1400—42 IN. TROUGHING 6" ROLLS
100—60 IN. TROUGHING 6" ROLLS
600—30 & 36 IN. RETURN 5" ROLLS
450—42 IN. RETURN 5" ROLLS
25—60 IN. RETURN 5" ROLLS
ALL ABOVE FITTED BALL BEARINGS.

30 COMPLETE NEW TERMINAL SETS WITH LAGGED HEAD PULLEYS

DARIEN CORP., 49 E. 41st St., New York 17, N.Y.

USED EQUIPMENT

BUCYRUS-ERIE Model S-90, 4-wheel 8 to 10 yd. scraper.
ALLIS-CHALMERS Model HD-14C tractor with Gar Wood hydraulic control unit.
ALLIS-CHALMERS Model AD motor grader powered by a GM 3-cylinder engine.
CATERPILLAR Model D-8 tractor with LeTourneau cable tip dozer.

For further information, contact

E. F. CRAVEN COMPANY
Phone 3-5521 P.O. Box 538
Greensboro, N. C.

Five Bucyrus-Erie 29-T drills, 440 v., 3 phase, 60 cycle, electric power, complete with tools and a stock of spare parts. Also one Bucyrus-Erie No. 12 bit dresser. Location: Middle West. Box 3482

Complete dragline equipment including 80-foot boom and 4-yard bucket removed from Bucyrus-Erie 120-B Serial No. 11572. Excellent condition. Price $12,000 F.O.B. Napa, California.

Basalt Rock Company
Napa, California

WANTED: Dragline attachment for a 44-B shovel.

Summit Construction Co.
Garrett, Pennsylvania

HELP WANTED

EQUIPMENT MAINTENANCE SUPERVISOR—California

Unusual opportunity for young man with two or more years Mechanical Engineering training and field experience in maintenance of heavy construction equipment used on highway, airfield and dam projects. Requires equipment and construction experience, but principal qualifications are common sense, interest and ambition. Functions include maintenance inspections, cost records, parts control, and supervision of maintenance procedures. Offers real opportunity for advancement. Write giving complete qualifications, references, and salary requirements. Your reply will be held confidential.

Address reply to Box No. 3484, EXCAVATING ENGINEER.

POSITIONS WANTED

General superintendent or superintendent available; 30 years experience and qualifications; supervising, estimating, and building all types highways, airports, heavy excavating, large sewers, earth-filled dams, levies, covering several states. Honest, sober, and reliable, know cost and equipment. Interpret plans and organizing. Box 3464

Position wanted as shovel, dragline, clamshell or pile driver operator. Have operated gas, steam and diesel large and small machines. Prefer steady work. P. O. Box 8, Hurricane, West Virginia. Phone 4403-Hurricane.

Here's the score:

"GUTS" is the way the owner sums up the record of the hard-driving "Caterpillar" Diesel D13000 Engine which powers this Bucyrus-Erie Shovel in a rock pit. Charles Guam, superintendent of Sam Braen Sons Co., Inc., Wyckoff, N. J., declares:

"This 'Cat' Engine works in hard rock in summer heat, winter cold and dust. In almost 3 years there has been no down-time. We have spent less than $1 on it in more than 4,000 hours. This D13000 Diesel has guts."

Little wonder that Sam Braen Sons is sold on other "Caterpillar" equipment. While the D13000 is working faultlessly in one pit, a "Cat" Diesel D318 Engine is the steady heart of a Lorain Shovel in another pit. The Lorain loads dirt for transfer to a former gravel pit where a "Caterpillar" D8 Tractor and 'Dozer are leveling land for building purposes.

High production by "Caterpillar" Diesels stems from unceasing devotion to small, important details. For instance, injection pumps and valves are protected from harmful materials in the fuel by filters. These fuel filters are made of high-quality, absorbent material wound upon an inner sleeve of the finest laboratory filter paper. Small details make the big difference.

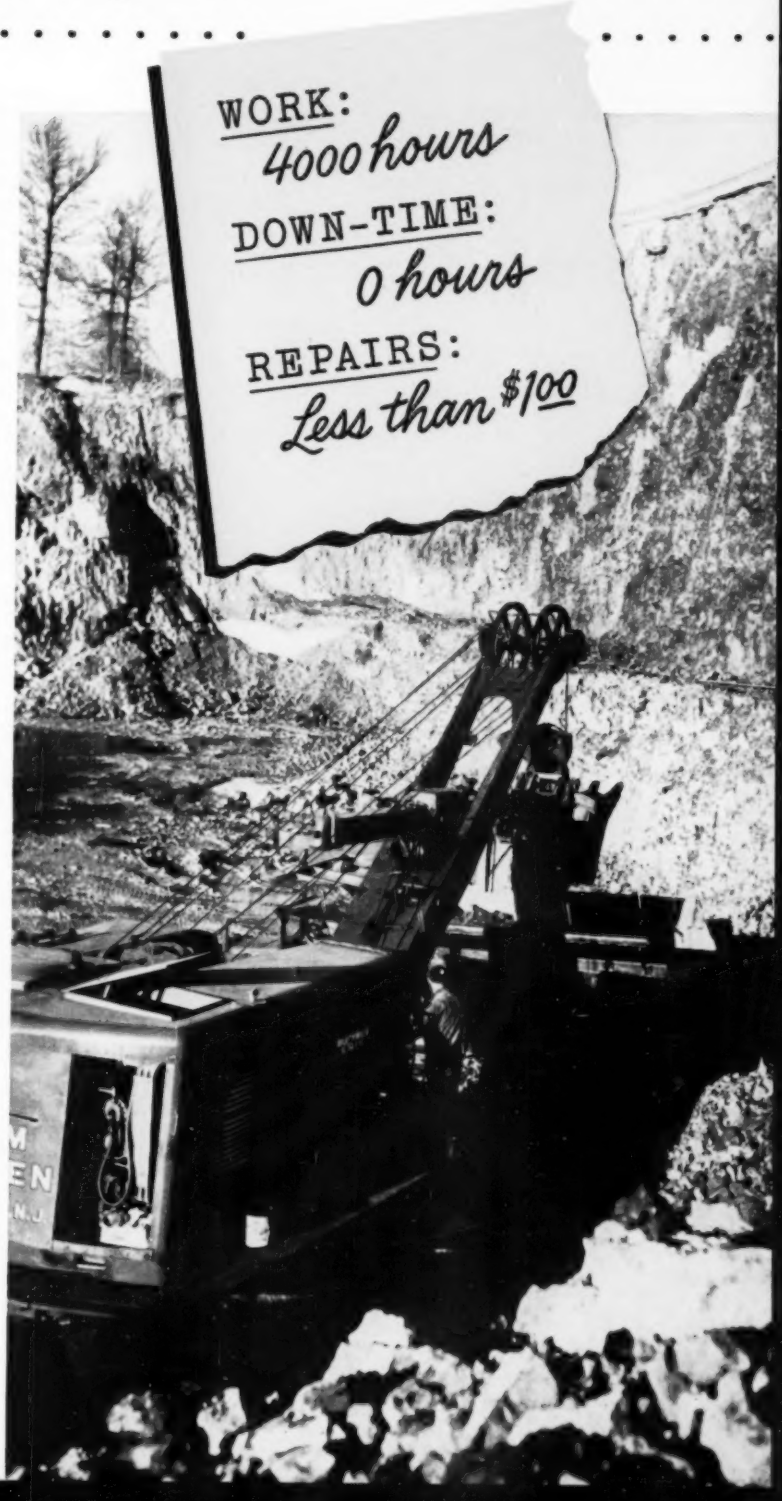
Specify "Cat" Diesels in the equipment you buy. Let your "Caterpillar" Dealer help you select the right size engine for repowering your present equipment.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT



BRODERICK & BASCOM

Yellow Strand®

PREFORMED WIRE ROPE

Which wire rope provides *a well-marked route* to sustained production?

Wire-rope users who get around know the answer to that. Like an unmistakable highway sign, the familiar yellow of Preformed Yellow Strand gives you confidence that you're headed where you want to go. The limberness of this kink-resistant rope contributes to a smooth run. Its toughness keeps a long interval between stops for checking or replacement. Most important, an installation recommended by our engineers is designed to bring out the true capacity of your equipment—and only working machines pay off. Let's talk over the possibility of stepping up your wire-rope service.

Broderick & Bascom Rope Co.
St. Louis 15, Mo.

Branches:
New York, Chicago, Houston, Odessa, Tex.,
Los Angeles, San Francisco,
Portland, Seattle

Factories:
St. Louis, Peoria, Houston, Seattle

Distributors in All Industrial Centers